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# Flight Data File Crew Activity Plan STS-4

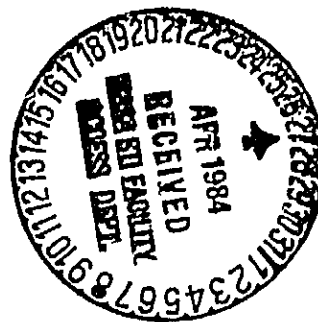
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Final  
May 14, 1982



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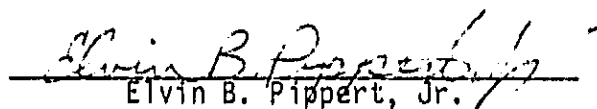
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STS-4 CREW ACTIVITY PLAN

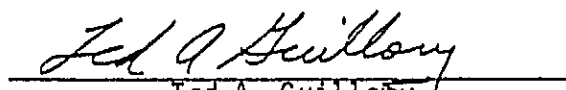
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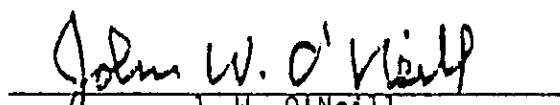
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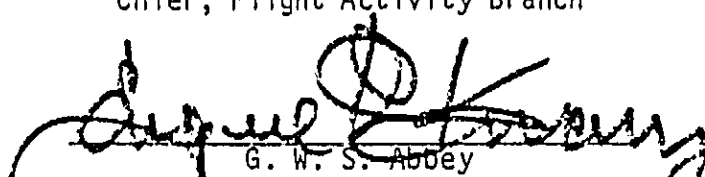
  
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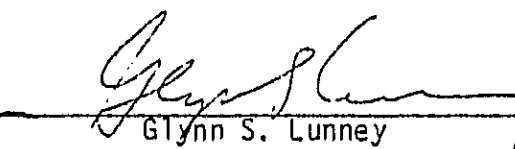
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## ACKNOWLEDGMENTS

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# CHANGE CONTROL RECORD

ORBITAL FLIGHT TEST: STS-4 Crew Activity Plan

CONTROL NO.	FDF EDITION INCORPORATED*		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
CAP(4)-1	BASIC	03/13/82	WITHDRAWN
CAP(4)-2	FINAL	05/14/82	
CAP(4)-3	FINAL	05/14/82	
CAP(4)-4A	FINAL	05/14/82	
CAP(4)-5	FINAL	05/14/82	
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CAP(4)-7	FINAL	05/14/82	
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CAP(4)-12	FINAL	05/14/82	
CAP(4)-13	FINAL	05/14/82	
CAP(4)-17	FINAL	05/14/82	

\*482 changes incorporated into current edition only are identified by change bars.

STS-4/FIN

# STS-4 CREW ACTIVITY PLAN

## LIST OF EFFECTIVE PAGES

FINAL 05/14/82

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## INTRODUCTION

The STS-4 Crew Activity Plan contains the on-orbit timeline, which is a flight data file article. It does not contain the detailed crew activities that will be covered in the STS-4 Ascent, Post Insertion, Deorbit Prep, or Entry checklists.

This on-orbit timeline satisfies the objectives specified in the STS-4 Flight Requirements Document (Final).

The flight profile (trajectory data) used for this Crew Activity Plan is from Ref. 2 which is for a June 27, 1982 launch date.

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TIMELINE FORMAT SYMBOL NOMENCLATURE



GMT (D:H:M)	NET (D:H:M)	CDT (D:H:M)	FO/DOY	BEIR MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
157:15:00/ 158:03:00/ 007:00:00/ 002:12:00/ 157:10:00/ 157:22:00	2	3	157	20.6	MAY 14, 1982	STS-4	FINAL	STS4/FIR
GMT: 157 10	11	12	14	15	16	17	18	19
FO	1	2	3	4	5	6	7	8
NET: 007 0	1	2	3	4	5	6	7	8
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TV/VIR								
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NOTES:	<p>ORIGINAL PAGE 13 OF POOR QUALITY</p>							

Figure 1-1

## A. FORMAT SYMBOL NOMENCLATURE

### 1. Summary Level Timeline (12-Hr Timespan)

The following letters (a-j) refer to those highlighted in Figure 1-1.

- a. **TIMESCALES** - Three time references are presented in this section of the summary timeline format. The time references used are TIG Minus Time (TIG), Greenwich Mean Time (GMT), and Mission Elapsed Time (MET). MET is referenced to liftoff beginning at 00/00:00:00 (days, hours, minutes and seconds). TIG is referenced to the deorbit ignition time and counts down to 0/00:00:00 at ignition on the CRT timer. TIG is only used on the deorbit preparations on entry day.
- b. **CREWMEN (CDR & PLT)** - This is the crewmen column of the format where titles of scheduled activities are shown for the commander (CDR) and pilot (PLT) at the appropriate times in the flight.
- c. **DAY/NIGHT, ORBIT, MOON UP/DOWN**
  - 1) **Day/Night** - The orbital day/night intervals are delineated with black bars indicating when the Orbiter is in darkness.
  - 2) **Orbit** - Indicates which orbit the spacecraft is in by numerical sequence. The beginning of an orbit occurs when the Orbiter crosses the Earth's equator going from the southern to the northern hemisphere (ascending node). The succession of orbits is numbered in this column starting with Orbit 1 for launch.
  - 3) **Moon Up/Down** - The moon up/down intervals are delineated with black bars indicating when the moon is down.
- d. **EARTH TRACE W/SAA** - This is a display of the groundtrack of the Orbiter and when it passes over the South Atlantic Anomaly (SAA) (indicated by a '|—|').
- e. **GSTDN and SGLS COVERAGE** - The GSTDN and SGLS communication coverage periods are indicated in this area with a horizontal line indicating when communication is available; the GSTDN and SGLS site is identified to the right of the line.
- f. **OPS** - The GPC software configuration in use during the flight is indicated in this area.
- g. **DEORBIT KSC/EDW** - Times are identified in this area when deorbit burn opportunities exist for Edwards AFB (EDW) and Kennedy Space Center (KSC).
- h. **ATTITUDE and MANEUVERS**
  - 1) **Attitude** - The current attitude of the vehicle is identified in this area, i.e., PTC, IMU, -ZLV X-POP, -XSI.

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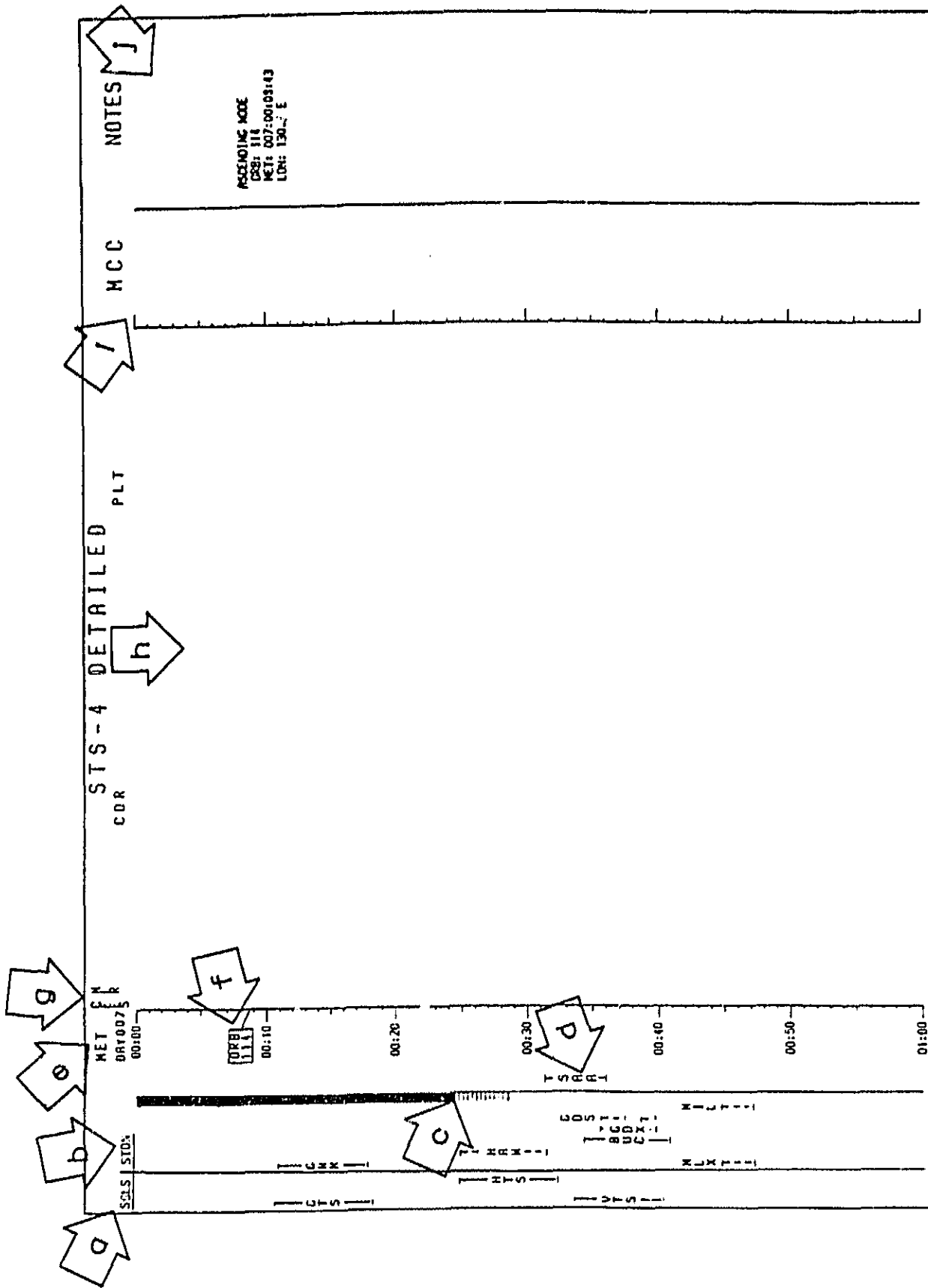


Figure 1-2  
1-4





STS-4/FIN

2) Maneuvers - An '+' is placed at the time an attitude maneuver occurs if the duration in attitude is to be greater than 15 minutes.

- i. TV/VTR - Live TV or recorded TV (VTR) is indicated in this area with a '|—|'.
- j. CFES/MLR - Payload operating periods are indicated with a '|—xxx—|'.

## 2. Detailed Level Timeline (1-Hr Timespan)

The following letters (a-j) refer to those highlighted in Figure 1-2.

- a. SGLS COVERAGE - In this column the SGLS sites and their acquisition periods are identified by a solid line. The sites are HTS, VTS, GTS, IOS, and NHS.
- b. GSTDN COVERAGE - In this column the GSTDN sites and their acquisition periods are identified. Each site acquisition period is annotated by a solid line, a dashed line or a dotted line. The different annotations indicate the following:
  -  A site that has S-Band, UHF voice and TV capabilities (GDS, HAW, MIL, MLX, GDX)
  -  A site with S-Band and UHF voice capabilities (BDA, GWM, ACN, BUC, DKR, MAD, MAX)
  -  A site with only S-Band (no UHF or TV) capabilities (AGO, ORR)
  -  A site with only UHF (no S-band or TV) capabilities (BOT, YAR, IOS)
- c. DAY/NIGHT CYCLE - In this column a solid bar indicates the period when the Orbiter and Earth are in darkness. A slashed line indicates when the Orbiter is in daylight but the Earth beneath the Orbiter is still in darkness (terminator).
- d. SOUTH ATLANTIC ANOMALY (SAA) - This bar defines those periods when the Orbiter passes through the SAA.
- e. MET TIMESCALE - This format is a one-hour format with minute tick marks on the vertical timescale referenced to Mission Elapsed Time (MET) with liftoff occurring at 0/00:00:00.
- f. ORBIT - Indicates which orbit the spacecraft is in by numerical sequence. Orbit 1 begins at liftoff with subsequent orbits starting when the Earth's equator is crossed (ascending node).

- g. ATTITUDE and PAYLOAD USER COLUMN (ATT/CFES/MLR) - Indicates Orbiter attitude and when CFES and MLR are in operation.
- h. CREWMAN COLUMNS - The activities for the CDR and PLT are scheduled in this area.
- i. MCC COLUMN - Any uplinks, commands or updates required are scheduled at the appropriate time in this column. A vertical line is also used to indicate TV coverage.
- j. NOTES - This area will be used for location of pads, times of star availability, time and longitude of the ascending node, TV and photography scenes, and any other supplemental information required.
- k. In the timescale a DAP A and DAP B CONFIG reference will be included. A number is associated with both DAPs A and B; each number indicates a particular DAP configuration for either DAP A or DAP B. The DAP reference without parentheses indicates the 'active' DAP for that time period on the page. Table 1-1 identifies the various configurations for DAP A and DAP B that are used in the STS-4 timeline.

# DAP A CONFIGURATIONS

TRANSLATION		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
PULSE	ft/sec	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.14	0.1	0.1	0.1	0.1	0.1
ROTATION																	
DSC RT	NORM o/sec	0.2	0.2	2.0	0.2	1.0	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	VERN o/sec	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.5	0.007	0.2	0.2	0.2	0.2	0.2	0.2	0.2
PULSE	NORM o/sec	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.28	0.6	1.0	0.1	0.3	0.1
	VERN o/sec	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
COMP	NORM o/sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VERN o/sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEADBAND																	
ATT	NORM°	5.0	5.0	1.0	5.0	5.0	3.0	3.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0	0.1
	VERN°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5	1.0	3.0	1.0	5.0	0.07	1.0	1.0
RATE	NORM o/sec	0.2	0.2	0.02	0.2	0.2	0.2	0.2	0.2	0.02	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	VERN o/sec	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02
JET OPT																	
P		1	1	3	3	3	3	3	1	1	1	2	3	1	1	3	1
	Y	1	1	3	3	1	3	3	1	1	3	1	3	1	1	3	1
CNTL ACCEL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# DAP B CONFIGURATIONS

<u>TRANSLATION</u>		B1	B2	B3	B4	B5	B6
PULSE	ft/sec	0.02	0.02	0.02	0.02	0.02	0.1
<u>ROTATION</u>							
DSC RT	NORM o/sec	0.5	0.5	0.5	0.2	0.5	0.5
	VERN o/sec	0.2	0.2	0.2	0.2	0.2	0.3
PULSE	NORM o/sec	0.04	0.04	0.04	0.04	0.28	0.04
	VERN o/sec	0.002	0.002	0.002	0.002	0.002	0.001
COMP	NORM o/sec	0.0	0.0	0.0	0.0	0.0	0.0
	VERN o/sec	0.0	0.0	0.003	0.0	0.0	0.0
<u>DEADBAND</u>							
ATT	NORM°	3.0	3.0	3.0	3.0	3.0	3.0
	VERN°	1.0	0.1	1.0	1.0	1.0	3.0
RATE	NORM o/sec	0.2	0.2	0.2	0.2	0.2	0.2
	VERN o/sec	0.02	0.02	0.02	0.02	0.02	0.02
<u>JET OPT</u>							
P		1	1	1	3	3	1
Y		1	1	1	3	1	1
CNTL ACCEL		0	0	0	0	0	0

STS-4 OVERVIEW



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FLIGHT STS-4		EDITION FINAL		PUB. DATE 5/14/82	
FD 8	SOON	18	109	110	111
	0.58	20	112	113	114
	BURN	122	123	124	125
	PREP	126	127	128	129
	DEORBIT IGNITION (6/22:41:23)	130	131	132	133
	ENTRY INTERFACE	134	135	136	137
	LANDING (EDWARDS)	138	139	140	141
		142	143	144	145
		146	147	148	149
		150	151	152	153
		154	155	156	157
		158	159	160	161
		162	163	164	165
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		182	183	184	185
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		206	207	208	209
		210	211	212	213
		214	215	216	217
		218	219	220	221
		222	223	224	225
		226	227	228	229
		230	231	232	233
		234	235	236	237
		238	239	240	241
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		250	251	252	253
		254	255	256	257
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		306	307	308	309
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		342	343	344	345
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		382	383	384	385
		386	387	388	389
		390	391	392	393
		394	395	396	397
		398	399	400	401
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		450	451	452	453
		454	455	456	457
		458	459	460	461
		462	463	464	465
		466	467	468	469
		470	471	472	473
		474	475	476	477
		478	479	480	481
		482	483	484	485
		486	487	488	489
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		494	495	496	497
		498	499	500	501
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		538	539	540	541
		542	543	544	545
		546	547	548	549
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		566	567	568	569
		570	571	572	573
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		582	583	584	585
		586	587	588	589
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		598	599	600	601
		602	603	604	605
		606	607	608	609
		610	611	612	613
		614	615	616	617
		618	619	620	621
		622	623	624	625
		626	627	628	629
		630	631	632	633
		634	635	636	637
		638	639	640	641
		642	643	644	645
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		658	659	660	661
		662	663	664	665
		666	667	668	669
		670	671	672	673
		674	675	676	677
		678	679	680	681
		682	683	684	685
		686	687	688	689
		690	691	692	693
		694	695	696	697
		698	699	700	701
		702	703	704	705
		706	707	708	709
		710	711	712	713
		714	715	716	717
		718	719	720	721
		722	723	724	725
		726	727	728	729
		730	731	732	733
		734	735	736	737
		738	739	740	741
		742	743	744	745
		746	747	748	749
		750	751	752	753
		754	755	756	757
		758	759	760	761
		762	763	764	765
		766	767	768	769
		770	771	772	773
		774	775	776	777
		778	779	780	781
		782	783	784	785
		786	787	788	789
		790	791	792	793
		794	795	796	797
		798	799	800	801
		802	803	804	805
		806	807	808	809
		810	811	812	813
		814	815	816	817
		818	819	820	821
		822	823	824	825
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		830	831	832	833
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		838	839	840	841
		842	843	844	845
		846	847	848	849
		850	851	852	853
		854	855	856	857
		858	859	860	861
		862	863	864	865
		866	867	868	869
		870	871	872	873
		874	875	876	877
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		882	883	884	885
		886	887	888	889
		890	891	892	893
		894	895	896	897
		898	899	900	901
		902	903	904	905
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		910	911	912	913
		914	915	916	917
		918	919	920	921
		922	923	924	925
		926	927	928	929
		930	931	932	933
		934	935	936	937
		938	939	940	941
		942	943	944	945
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		950	951	952	953
		954	955	956	957
		958	959	960	961
		962	963	964	965
		966	967	968	969
		970	971	972	973
		974	975	976	977
		978	979	980	981
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		986	987	988	989
		990	991	992	993
		994	995	996	997
		998	999	1000	1001

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SUMMARY TIMELINE

SUMMARY  
TIMELINE

# SUMMARY TIMELINE

GMT (D:H:M)	NET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
178:15:00/ 179:03:00	000:00:00/ 000:12:00	178:10:00/ 178:22:00	1/ 178 DOY	-1.2		JUNE 27, 1982	STS-4	FINAL	5/14/82

GMT : 178 15	16	17	18	19	20	21	22	23	0	1	2	3
FD : 1									0	9	10	11
NET : 000 0									0	9	10	11

CDR	ASCENT	PLD TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP
PLT	ASCENT	PLD TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP	BURN PREP
DRY/NIGHT												
ORBIT												
NON UP/DOWN												
EARTH TRACE												
M/SAR												
GSTON COVERAGE												
SCLS COVERAGE												
OPS												
DEORB KSC												
EDW												
ATTITUDE												
MANEUVERS												
TV/VTR												
CFES												
MLR												

NOTES:												
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5714782 515071N

3-2

GMT	(D:H:M)	MET	(D:H:M)	CDT	(D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
179:03:00/	179:15:00	000:12:00/	001:00:00	178:22:00/	179:10:00	2/178	0.2		JUNE 28, 1982	SIS-4	FINAL	5/14/82

GMT : 179 3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FD : 1	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
MET : 000 12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
CDR																						
PLT																						
DAY/NIGHT																						
ORBIT																						
EARTH TRACE W/SRA																						
CSTON COVERAGE																						
SCLS COVERAGE																						
OPS DEORB KSC EDM																						
ATTITUDE																						
NAME/VERS																						
TV/VIR																						
CFES																						
MLR																						

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NOTES:

- CIRC PUMPS TO GPC
- FTD 477-02 PASSIVE CAVITY CROCIENT ATT HOLD
- FSD S436-01 CFES (SEQUENCE 1) • FSD S436-01 CFES
- FSD S436-01 CFES
- (SAMPLE 1 SEPARATION & COLLECTION) FSD S436-01 CFES
- FTD 452-01 VPC FREEZER HEAT EXCHANGER DYNAMICS

1-3

[illegible]

[illegible]



GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FO/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE	
181:03:00/ 181:15:00		002:12:00/ 003:00:00		180:22:00/ 181:10:00		4 / 180 CDT		4.9		C		JUNE 30, 1982		STS-4		FINAL		5/14/82	
CDT : 181 3		MET : 002 12		CDT : 180 22		FO: 4		BETA: 4.9		MOON: C		JUNE 30, 1982		STS-4		FINAL		5/14/82	
CDR		SLEEP		POST SLEEP ACT		MERL		EXERCISE		MERL		MERL		MERL		MERL		MERL	
PLT		SLEEP		POST SLEEP ACT		MERL		EXERCISE		MERL		MERL		MERL		MERL		MERL	
DRY/NIGHT		41		42		43		44		45		46		47		48			
ORBIT		41		42		43		44		45		46		47		48			
EARTH TRACE W/SRA		41		42		43		44		45		46		47		48			
CSTDN COVERAGE		-CHN -RGN -RGN		-CHN -RGN -RGN		-CHN -RGN -RGN		-CHN -RGN -RGN		-CHN -RGN -RGN		-CHN -RGN -RGN		-CHN -RGN -RGN		-CHN -RGN -RGN		-CHN -RGN -RGN	
SGLS COVERAGE		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS	
OPS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS	
DEORB KSP EDH		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS	
ATTITUDE		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS	
MANEUVERS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS	
TV/VTR		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS	
CFES		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS	
MLR		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS		-GTS	
NOTES:		<p>           # OMS/ROS # FSD 5436-01 CFES (SEQUENCE 11)            # STAR TRACKERS ON            # FTD 412-02 STRATROCK COLDSONK            # FTD 412-01 ATT HOLD THERMAL RESPONSE            # FSD 5436-01 CFES            # FTD 466-01 RAD PERFORMANCE TEST            # FSD 5436-01 CFES            # FTD 479-01 - ON ORBIT TROPH NAV            # FTD 466-01 RAD PERFORMANCE TEST            # FSD 5436-01 CFES            # FTD 479-01 - ON ORBIT TROPH NAV         </p>																	

3-7

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DISK 28/41/5

8-3



[illegible]

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE	
183:03:00/ 183:15:00		004:12:00/ 005:00:00		182:22:00/ 193:10:00		6 / 182 CDT		11.4		0		JULY 2, 1982		STS-4		FINAL		5/14/82	
CMT : 183		FD : 5		MET : 004		12		13		14		15		16		17		18	
CDR		SLEEP		POST SLEEP ACT		MEAL		PUBO CYCLE TEST		MEAL		MEAL		BURN PREP		EXERCISE		TECH CRS RELEASE	
PLT		SLEEP		POST SLEEP ACT		MEAL		PUBO CYCLE TEST		MEAL		MEAL		BURN PREP		TV ACT		EXERCISE	
DAY/NIGHT		73		74		75		76		77		78		79		80			
EARTH TRACE W/SAR		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH	
CSTON COVERAGE		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH	
SCLS COVERAGE		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH	
OPS DEORB KSC EDW		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH	
ATTITUDE		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH	
MANEUVERS TV/VTR CFES MLR		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH		-DKR -ACH	
NOTES:		FTO 412-05 FICS THERMAL SOWBCK, ONE FHO ENGINE HI LOBO DUCT HTR FTO 474-01 NAV BASE STABILITY FTO 412-01 ATT HOLD THERMAL RESPONSE FTO 451-03 PUBO COLD CASE PERFORMANCE FTO 451-03 PUBO COLD CASE PERFORMANCE 30 SEC F3F BURN FTO 412-05 FICS THERMAL SOWBCK, ONE FHO ENGINE																	

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5/14/82 515471N

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CMT	(D:H:M)	MET	(D:H:M)	CDT	(D:H:M)	FD/DOY	BETA	MOON	FLIGHT	EDITION	PUB. DATE
183:15:00/	184-03:00	005:00:00/	005:12:00	183:10:00/	183:22:00	6/183	CDT	13.2	JULY 2, 1982	FINAL	5/14/82
GMT : 183 15 ID : 6 MET : 005											
CDR	16	17	18	19	20	21	22	23	24	25	26
PLT	16	17	18	19	20	21	22	23	24	25	26
DAY/NIGHT	16	17	18	19	20	21	22	23	24	25	26
ORBIT	16	17	18	19	20	21	22	23	24	25	26
EARTH TRACE	16	17	18	19	20	21	22	23	24	25	26
W/SAR	16	17	18	19	20	21	22	23	24	25	26
CSTDN COVERAGE	16	17	18	19	20	21	22	23	24	25	26
SCLS COVERAGE	16	17	18	19	20	21	22	23	24	25	26
OPS	16	17	18	19	20	21	22	23	24	25	26
DEORB KSC	16	17	18	19	20	21	22	23	24	25	26
EDM	16	17	18	19	20	21	22	23	24	25	26
ATTITUDE	16	17	18	19	20	21	22	23	24	25	26
MANEUVERS	16	17	18	19	20	21	22	23	24	25	26
TV/VTR	16	17	18	19	20	21	22	23	24	25	26
CFES	16	17	18	19	20	21	22	23	24	25	26
MLR	16	17	18	19	20	21	22	23	24	25	26
NOTES:	31 MAR FTO 412-01 ATT HOLD THERMAL RESPONSE FTO 412-05 PROS THERMAL SORABOX, ONE PRO ENGINE FTO 452-02 SINGULARITY MANAGEMENT FTO 462-01 PRO SURFACE INSPECT FTO 452-03 UNLOADED ARM RESPONSE TO PROS FTO 452-02 SINGULARITY MANAGEMENT FTO 412-01 ATT HOLD THERMAL RESPONSE DMS/PCS FTO 467-02 LONG TERM VPC FREEZER TEMPERATURE STABILITY CHARGEOUT										

ORIGINAL PAGE 17  
OF POOR QUALITY

5714782 518778

3-12



CNT	(D:H:M)	NET	(D:H:M)	COT	(D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
184:15:00/	185:03:00	006:00:00/	006:12:00	184:10:00/	184:22:00	7/184	16.9		JULY 3, 1982	STS-4	FINAL	5-14-82
GMT : 184 15 MET : 006 0												
CDR		PLBO CYCLE TEST	16	17	18	19	20	21	22	23	24	25
		PLBO CYCLE TEST	16	17	18	19	20	21	22	23	24	25
PLT		PLBO CYCLE TEST	16	17	18	19	20	21	22	23	24	25
		PLBO CYCLE TEST	16	17	18	19	20	21	22	23	24	25
DAY/NIGHT			16	17	18	19	20	21	22	23	24	25
ORBIT			16	17	18	19	20	21	22	23	24	25
NON UP/DWN			16	17	18	19	20	21	22	23	24	25
EARTH TRACE W/SAA			16	17	18	19	20	21	22	23	24	25
CSTON COVERAGE			16	17	18	19	20	21	22	23	24	25
SCLS COVERAGE			16	17	18	19	20	21	22	23	24	25
OPS DEORB KSC EDM			16	17	18	19	20	21	22	23	24	25
ATTITUDE			16	17	18	19	20	21	22	23	24	25
MANEUVERS			16	17	18	19	20	21	22	23	24	25
TV/VTR			16	17	18	19	20	21	22	23	24	25
LFES			16	17	18	19	20	21	22	23	24	25
MLR			16	17	18	19	20	21	22	23	24	25
NOTES:			16	17	18	19	20	21	22	23	24	25

ORIGINAL PAGE 1  
OF POOR QUALITY

5714782 5184711

3-14



GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE	
185:03:00/ 185:15:00		006:12:00/ 007:00:00		184:22:00/ 185:10:00		8 / 184 CDT		18.8		0		JULY 4, 1982		STS-4		FINAL		5/14/82	
TTC																			
GMT : 185 3		GMT : 185 3		GMT : 185 3		GMT : 185 3		GMT : 185 3		GMT : 185 3		GMT : 185 3		GMT : 185 3		GMT : 185 3		GMT : 185 3	
FD : 7		FD : 7		FD : 7		FD : 7		FD : 7		FD : 7		FD : 7		FD : 7		FD : 7		FD : 7	
MET : 006 12		MET : 006 12		MET : 006 12		MET : 006 12		MET : 006 12		MET : 006 12		MET : 006 12		MET : 006 12		MET : 006 12		MET : 006 12	
SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP	
PLT		PLT		PLT		PLT		PLT		PLT		PLT		PLT		PLT		PLT	
DAY/NIGHT		DAY/NIGHT		DAY/NIGHT		DAY/NIGHT		DAY/NIGHT		DAY/NIGHT		DAY/NIGHT		DAY/NIGHT		DAY/NIGHT		DAY/NIGHT	
ORBIT		ORBIT		ORBIT		ORBIT		ORBIT		ORBIT		ORBIT		ORBIT		ORBIT		ORBIT	
EARTH TRACE W/SRA		EARTH TRACE W/SRA		EARTH TRACE W/SRA		EARTH TRACE W/SRA		EARTH TRACE W/SRA		EARTH TRACE W/SRA		EARTH TRACE W/SRA		EARTH TRACE W/SRA		EARTH TRACE W/SRA		EARTH TRACE W/SRA	
GSTON COVERAGE		GSTON COVERAGE		GSTON COVERAGE		GSTON COVERAGE		GSTON COVERAGE		GSTON COVERAGE		GSTON COVERAGE		GSTON COVERAGE		GSTON COVERAGE		GSTON COVERAGE	
SGLS COVERAGE		SGLS COVERAGE		SGLS COVERAGE		SGLS COVERAGE		SGLS COVERAGE		SGLS COVERAGE		SGLS COVERAGE		SGLS COVERAGE		SGLS COVERAGE		SGLS COVERAGE	
GPS DEORB KSC EDM		GPS DEORB KSC EDM		GPS DEORB KSC EDM		GPS DEORB KSC EDM		GPS DEORB KSC EDM		GPS DEORB KSC EDM		GPS DEORB KSC EDM		GPS DEORB KSC EDM		GPS DEORB KSC EDM		GPS DEORB KSC EDM	
ATTITUDE		ATTITUDE		ATTITUDE		ATTITUDE		ATTITUDE		ATTITUDE		ATTITUDE		ATTITUDE		ATTITUDE		ATTITUDE	
MANEUVERS		MANEUVERS		MANEUVERS		MANEUVERS		MANEUVERS		MANEUVERS		MANEUVERS		MANEUVERS		MANEUVERS		MANEUVERS	
TV/VTR		TV/VTR		TV/VTR		TV/VTR		TV/VTR		TV/VTR		TV/VTR		TV/VTR		TV/VTR		TV/VTR	
CEES		CEES		CEES		CEES		CEES		CEES		CEES		CEES		CEES		CEES	
MLR		MLR		MLR		MLR		MLR		MLR		MLR		MLR		MLR		MLR	
NOTES:		NOTES:		NOTES:		NOTES:		NOTES:		NOTES:		NOTES:		NOTES:		NOTES:		NOTES:	

ORIGINAL PAGE  
OF POOR QUALITY

☐ ENTRY CONFIC   ☐ NO SH LIST/VER  
☐ ENTRY CONFIC   ☐ NO SH LIST/VER  
☐ LAST MERL CLEARUP  
☐ FTO 412-01 ATT HOLD THERMAL RESPONSE

DETAILED TIMELINE

FLT DAY 1

STS-4 DETAILED

PLT

## NOTES

CCM

CDR

—

**HOLDS ITS**

PCS 1(2) DN-DEBIT ACT/REF/REL  
(DEBIT OPS C/L, ECLS)  
and the  
POST INSERTION

02817 OPS C/L, ECLS)

POST INSERTION

## POST INSERTION

Orbiter HIT at transition  
from POST INSERTION to OAP  
is FREE DRIFT (-ZLV,XPOP,  
-Ydy Forward )

3 1 621 107  
 LON: 129.1 E  
 MET: 000:04:10  
 ORG: 4  
 ASCENDING NODE

UPLINK  
ORBITER S.V.  
UPDATE  
DMS 3  
BURN PAD  
INFORM CREW  
RELOAD TGIS

ORIGINAL PAGE IS  
OF POOR QUALITY

UPDATE  
QMS 4  
BURN PAD

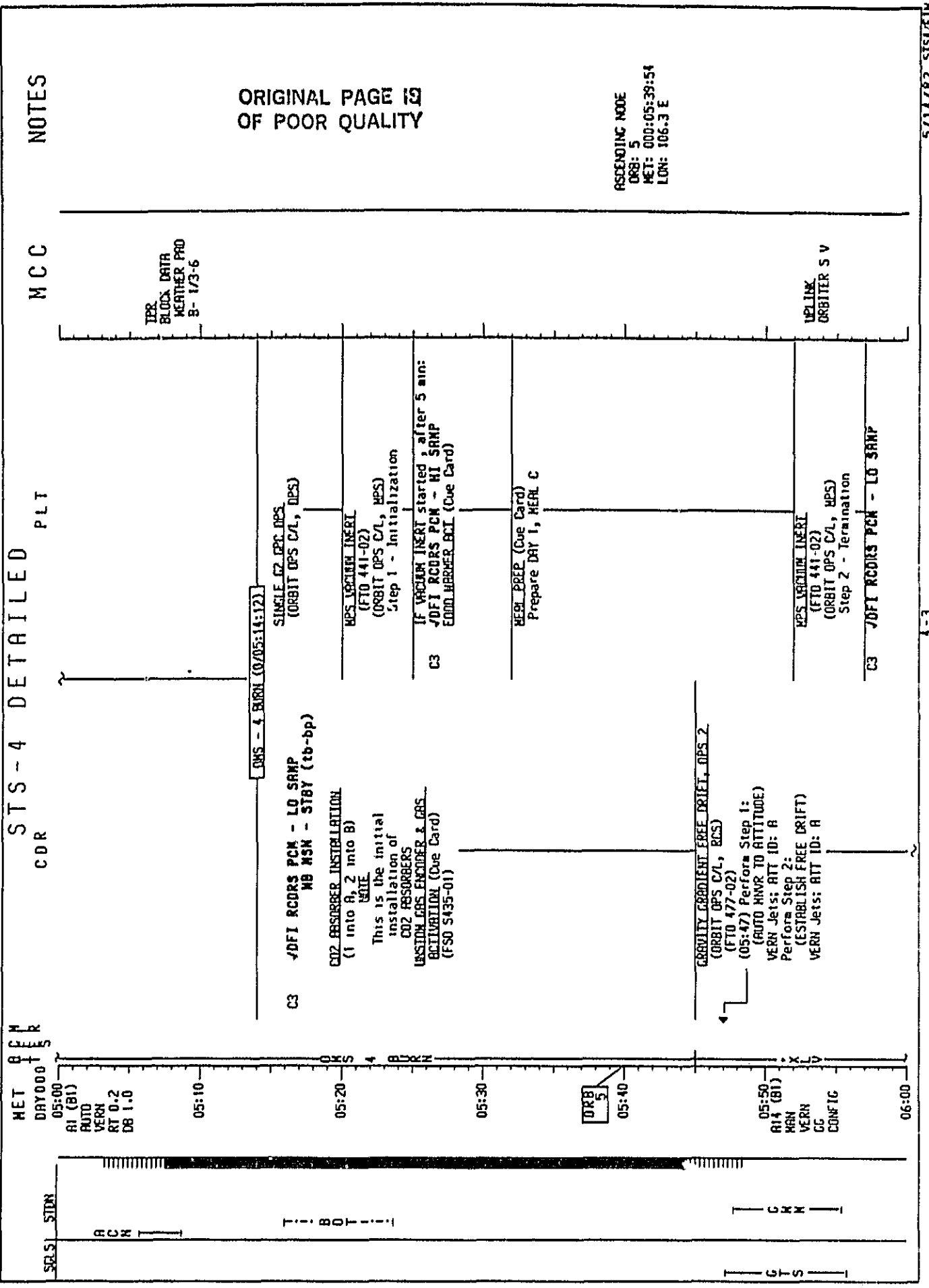
OR MCC ME  
PPU FUEL PUMP/VLV COOL S - OFF  
CMTLR PHR (three) - OFF

UN-ORBIT DMS BURN (DMS-4)  
(ORBIT OPS C/L, DMS)  
(2 ENG BURN)

**AUTO HAVR TO BURN ATT**

2-1

MISSIS 281119



ORIGINAL PAGE IS  
OF POOR QUALITY

5714782 S151111

# STS-4 DETAILED

PLT

CDR

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, IRR PLVILL)

GRAVITY GRADIENT FREE DRIFT, OPS 2

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, IRR P70/031)

EXPERIMENT ACTIVATION  
(OPERATIONS C/L, IRR B)

HOUSEKEEPING

HOUSEKEEPING

EXPERIMENT ACTIVATION (Decal)  
(FSD 5442-01)

Record Time:

MEAL

MEAL

NET  
DAY 000  
06:00

RTA (BT)  
MAN  
VERN  
CC  
CONFIC

06:10

06:20

06:30

06:40

06:50

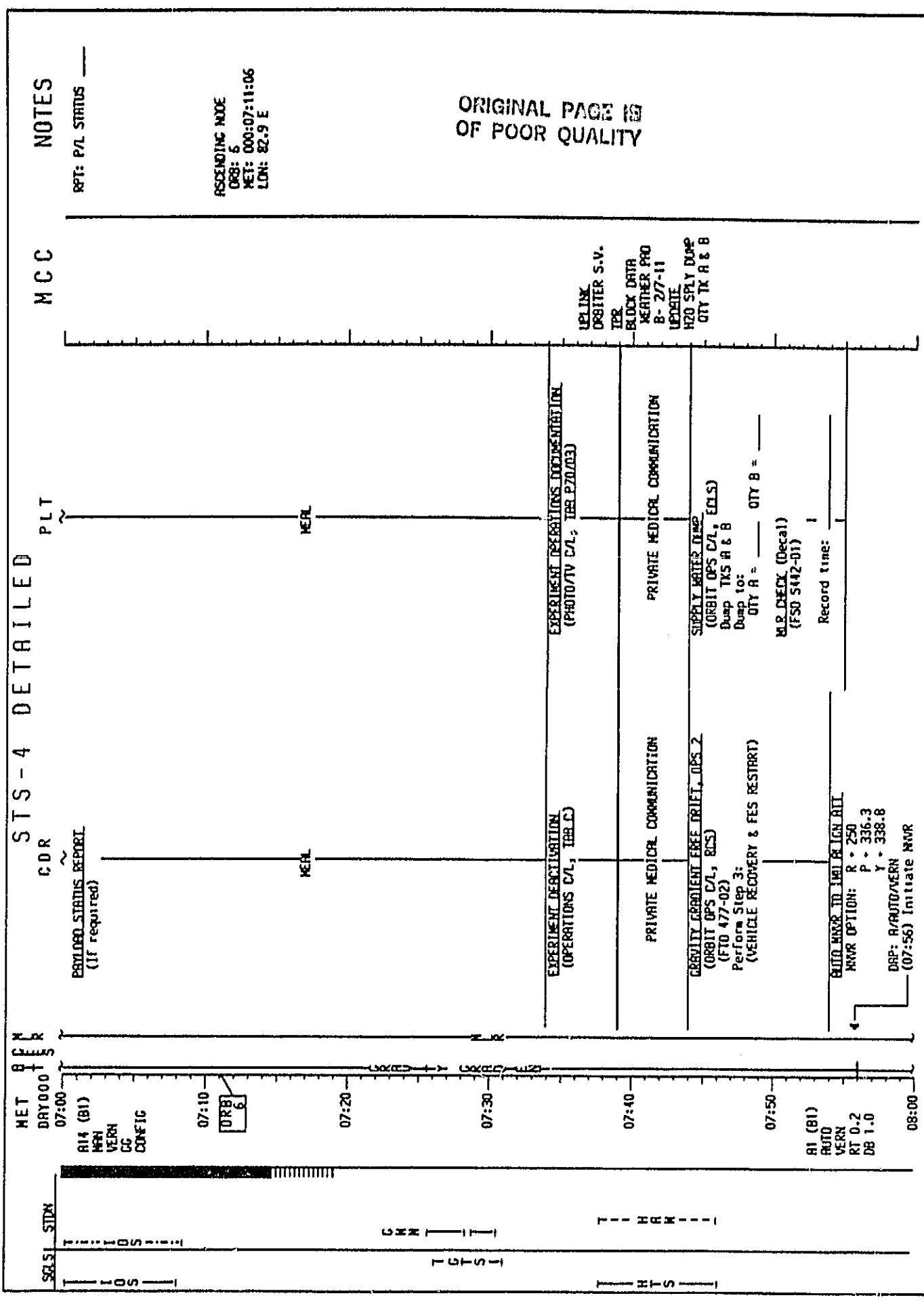
07:00

SGS1 STDN

T  
H  
T  
S  
T  
V  
T  
S  
B  
U  
C  
T

T  
B  
D  
T

# STS-4 DETAILED



ORIGINAL PAGE 18  
OF POOR QUALITY

# STS-4 DETAILED

CDR

PLT

MCC

NOTES

Stars 43 & 15 available from 0708:05 to 0708:41

Star 26 available from 0708:14 to 0709:02

READIATORS STOW/DEPLOY (ETO 466-01) (ORBIT OPS C/L, ELBO ETOs) Perform Step 2 - DEPLOY READIATORS

01 JCOBS - OFF Unstow COBS, Fwd Adapter Brkt Mount FWD, plug in (01)

AUTO MNVR TO IMU ALIGN ATT

IMU ALIGNMENT - S TRK (ORBIT OPS C/L, GNC)  
STAR ID: -Y: 43, RESSALHAGUE  
-Z: 15, HROGR  
RNC DIF: 84.1  
AUTO MNVR TO COBS ORL ATT  
MNVR OPTION: R \* 253.2  
P \* 343.7  
Y \* 330.1  
DAP: R/MNVR/VERN

COBS ORL LIBRATION (ORBIT OPS C/L, GNC)  
STAR ID: \*X: 26, FOHRAHUT

JCOBS FWR - OFF  
Stow COBS, Fwd Adapter Brkt  
REPORT: IMU ALIGN/COBS ORL RESULTS

AUTO MNVR TO -ZLV ATT (X-POP, \*Yby FWD)  
TGT ID: \* 2 (Earth)  
BODY VEC: \* 5 (Optional)  
P \* 90  
Y \* 348  
ON \* 270  
DAP: R/PTO/VERN  
Initiate TRK

PRE SLEEP ACTIVITY (ORBIT OPS C/L, COEN SYS)

PRE SLEEP ACTIVITY (ORBIT OPS C/L, COEN SYS)

FIELD CELL PURGE - AUTO (Cue Card)

CO2 ABSORBER REPLACEMENT (3 into R) Reurap 1 and stow

FIRE/SMOKE DETECT/SUPPRESS TEST (ORBIT OPS C/L, EPS)

BRANCAVIORE C/W LEMP TEST (ORBIT OPS C/L, EPS)

IMU ALIGN PREL

TRK ID:	1	RNC ERR	2	3
RNC				
* X	( )	( )	( )	( )
* Y	( )	( )	( )	( )
* Z	( )	( )	( )	( )

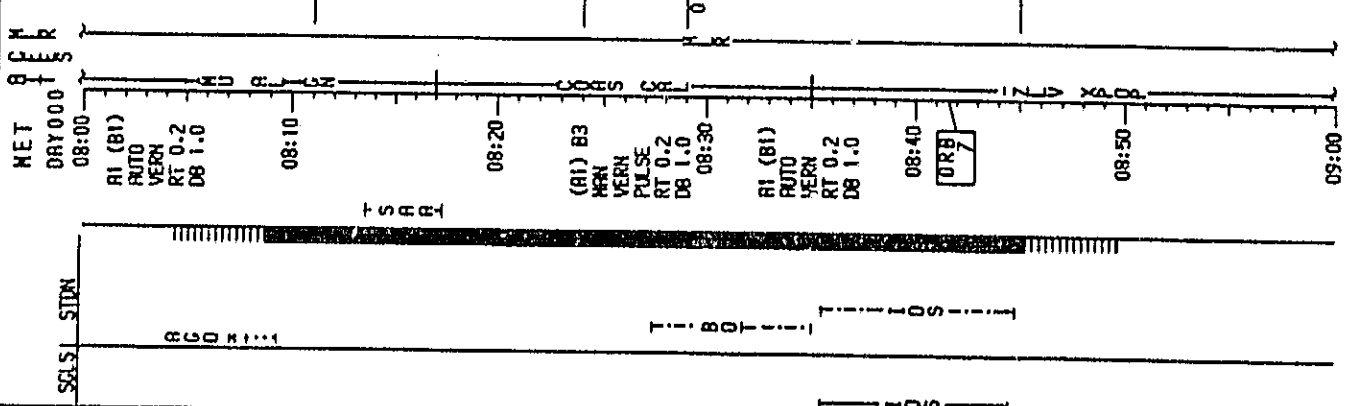
EXECUTION TIME: / /

RPT: IMU ALIGN and COBS ORL RESULTS

ASCENDING NODE  
ORB: 7  
MET: 000:08:41:35  
LON: 5° 8' E

COBS ORL LIBRATION PREL

\*X & BIRS  
UPDATE TIME: / /



ORIGINAL PAGE 1 OF FOUR

5711782 515477H

# STS-4 DETAILED

MET  
DAY 000  
09:00

AI (BT)  
AUTO  
VERB  
RT 0.2  
DS 1.0

SGLS STON

T C T S I

T H A W I

.....RGO.....

RCN

T S R R I

CDR

PLT

MCC

NOTES

PRE SLEEP ACTIVITY

Speaker Box Checkout

PRE SLEEP ACTIVITY

Speaker Box Checkout

UPLINK  
SPC LOAD -  
1ST COMM  
ALERT

SLEEP

SLEEP

ORIGINAL PAGE 19  
OF POOR QUALITY



# STS-4 DETAILED

NOTES

MCC

PLT

CDR

HER

MET

DAY 0001

AI (BI)  
AUTO  
VERN  
RT 0.2  
DB 1.0

ASCENDING NODE  
DRB: 8  
MET: 000:10:12:04  
LON: 36.6 E

ORIGINAL PAGE 11  
OF POOR QUALITY

SLEEP

SLEEP

ZLV XA DB

0008

SQLSL STDH

ACON

105 T I I I I I I

105 T I I I I I I

GNH I I I I I

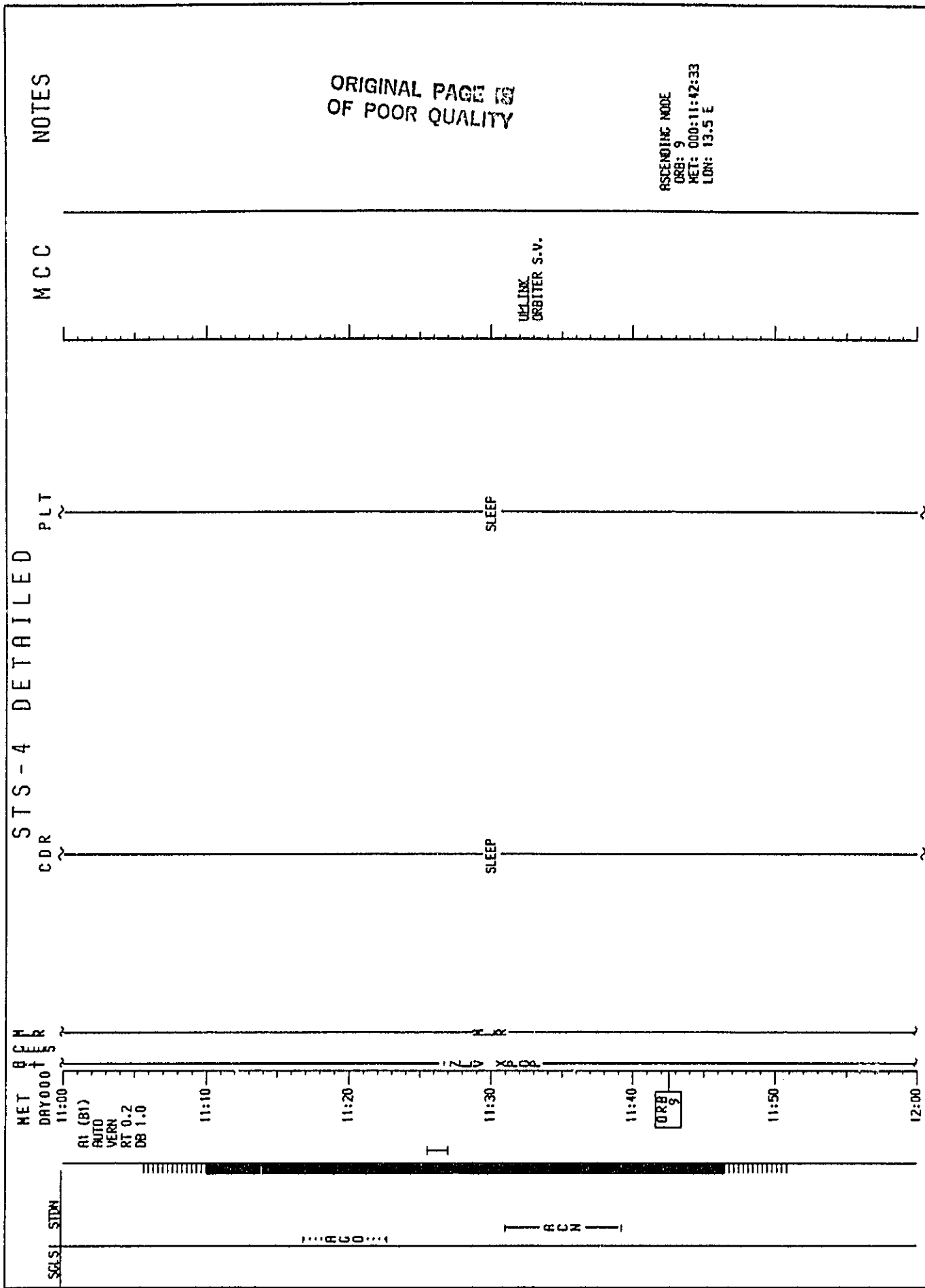
I S I S I

HTS I I I

5/14/82 STS4/EIN

L-8

# STS-4 DETAILED

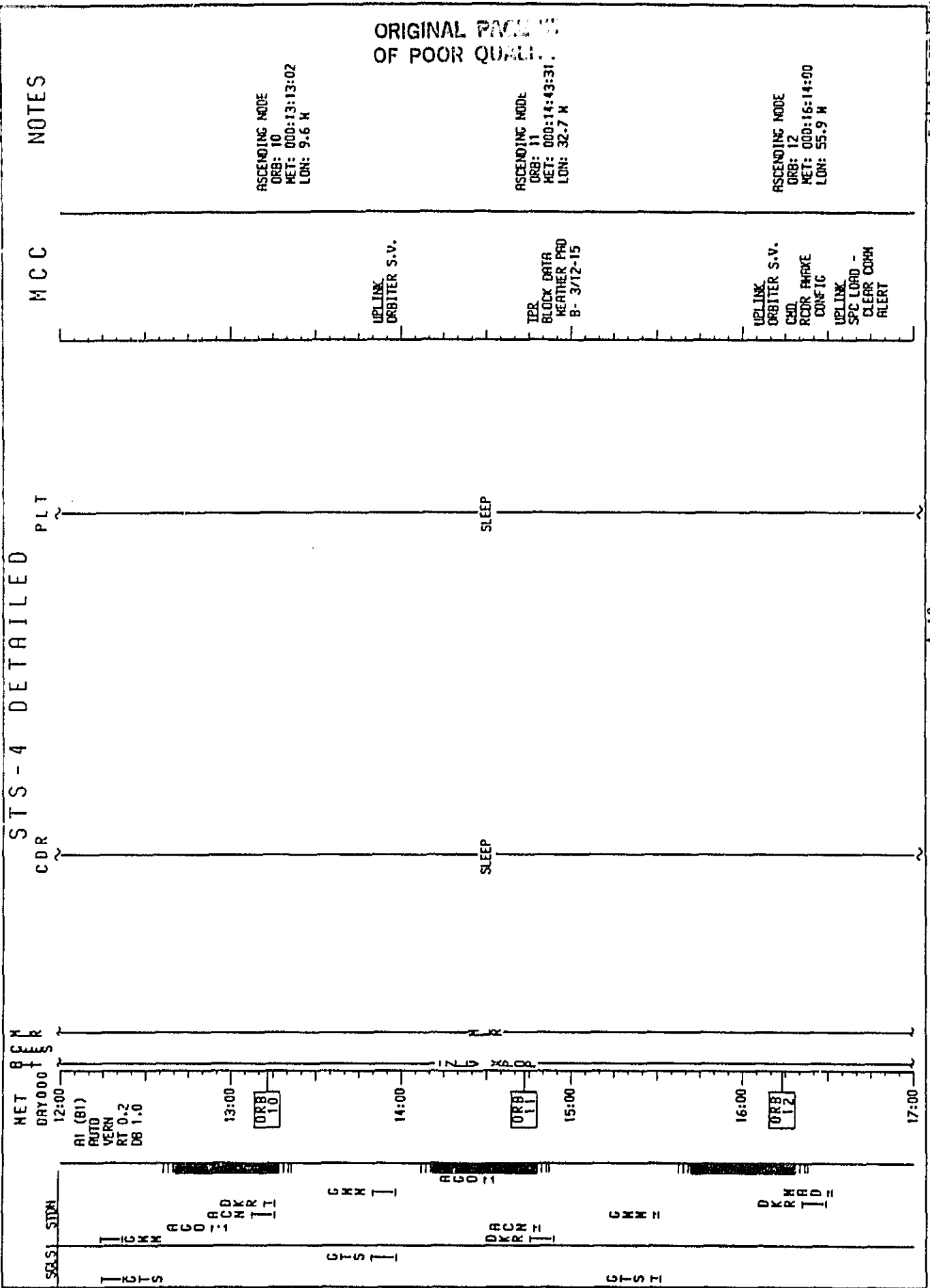


5/14/82 STS471N

4-9

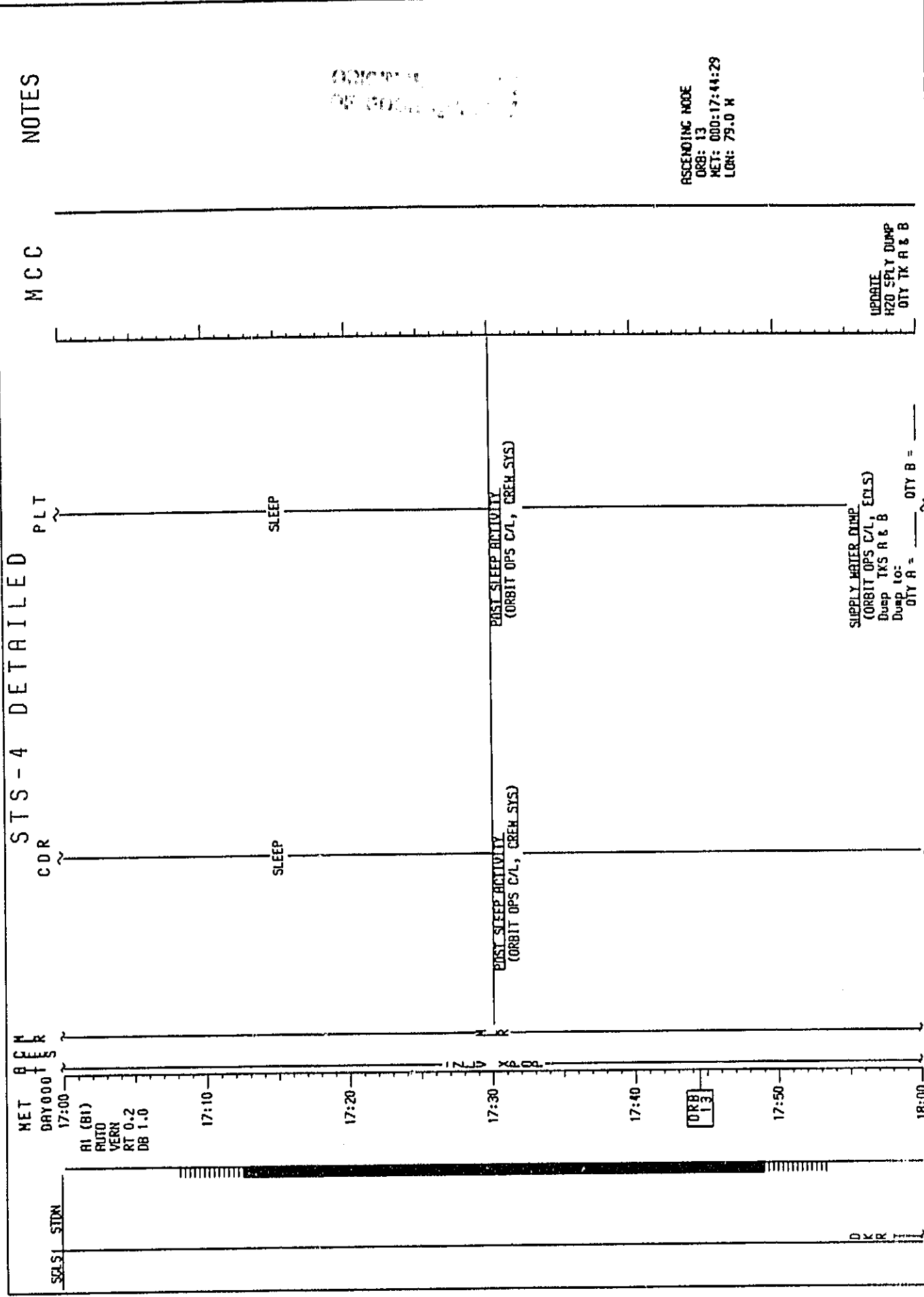
FLT DAY 2

STS-4 DETAILED



ORIGINAL PAGE 15  
OF POOR QUALITY

# STS-4 DETAILED



# STS-4 DETAILED

MET  
DAY 000  
18:00

AT (B1)  
AUTO  
VERN  
RT 0.2  
DB 1.0

CDR

POST SLEEP ACTIVITY

PLT

POST SLEEP ACTIVITY

MCC

INFORM PREM  
SM CKPT -  
REDD/NOT REDD

NOTES

ORIGINAL PAGE 16  
OF POOR QUALITY

Stars 15 & 43  
available from  
0718:39 to 0719:15

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

AUTO MNR TO MNR AT 18:32  
MNR OPTION: R = 16.2  
P = 172.5  
Y = 13.3

DAP: R/AUTO/VERN  
(18:32) Initiate MNR

FUEL CELL PURGE - HULL (Use Card)

HEATER BECOME IC  
(ORBIT OPS C/L, EPS)  
Config B

OPS 1(2) AIR-PORT ACT/REFUEL IC  
(ORBIT OPS C/L, ECL)  
Reconfig for SYS 2

STAR TRACKER SELF-TEST  
(ORBIT OPS C/L, GNC)  
IMUL ALIGNMENT - S TRK (IN DARKNESS)  
(ORBIT OPS C/L, GNC)  
STAR ID: -Y: 15, HADAR  
-Z: 43, RASALHAGUE  
ANC DIF: 84.1  
GRAVITY GRADIENT FREE DRIFT, OPS 2  
(FTO 477-02)  
(ORBIT OPS C/L, RCS)  
(18:57) Perform Step 1:  
(AUTO MNR TO ATTITUDE)  
VERN Jets: ATT ID: Per TPR message

HYD THERMAL CONDITIONING ENABLE  
(ORBIT OPS C/L, REU/HD)

TELEPRINTER PHIL

TRK ID:	1	RAC ERR	2	3
ANC	( )	( )	( )	( )
A X	( )	( )	( )	( )
A Y	( )	( )	( )	( )
A Z	( )	( )	( )	( )
EXECUTION TIME: / /				

STS-4 DETAILED		PLT	MCC	NOTES
<p><b>CDR</b></p> <p>GRAVITY GRADIENT FREE DRIFT, OPS 2 Perform Step 2: (ESTABLISH FREE DRIFT) VERN Jets; ATT ID: Per TPR message</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p>ASCENDING MODE ORB: 14 MET: 000:19:14:57 LDN: 102.2 N</p>
<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p>RPT: P/L STATUS —</p>
<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p>RPT: IMU ALIGN RESULTS —</p>
<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p><b>EXP. ACT. (OPS 2)</b></p> <p>EXP. ACT. (OPS 2) (PHOTO/TV C/L, IRR PIVOL)</p>	<p>ORIGINAL PHOTOGRAPH OF POOR QUALITY</p>

# STS-4 DETAILED

NOTES

MCC

PLT

CDR

MET 0000  
DAY 000

20:00  
A14 (81)  
MAN  
VERN  
CC  
CONFIG

20:10

20:20

20:30

20:40

ORB 15

20:50

21:00

SESLA STDM  
TDS

TDS

WORK

TT B  
MND  
ILR  
LXL

ORIGINAL PAGE  
OF POOR QUALITY

ASCENDING NODE  
ORB: 15  
MET: 000:20:45:26  
LON: 125.3 W

TYPE  
BLOCK DATA  
HEATHER PAD  
8- 4/16-19

DEFS ACTIVATION/CONF SYS ZERO LOCK  
(Cue Card)  
(FSO 5436-01)  
Sequence 1 - Samples 1,2 & 3

Changeout wireless  
headset battery pack

# STS-4 DETAILED PLT

CDR

CABIN TV SETUP (CIVIL-DEES TRY OPS)  
(PHOTO/TV C/L, TV SCENES)

NOTES

MCC

ORIGINAL PAGE IS  
OF POOR QUALITY

CONT SAMPLE FLOW/CONT SEP RUN -  
PART 1 (Cue Card)  
(FSO 5436-01) Sample 1  
Operator Call (Approx. 21:15)  
Display - CONT SAMPLE FLOW

Operator Call (Approx. 21:28)  
Display - PHOTO

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, IRR P70/04)

NOSE ACTIVATION (Cue Card)  
(FSO 5441-01)

NET 8 C/M

DAY 000

21:00  
R14 (B1)  
MON  
VERA  
CC  
CONFIC

21:10

21:20

21:30

21:40

21:50

22:00

SQLS1 SIDN

MB

WLD

1 X A

L

M  
DR  
KD  
RT

TIME 105

TIME 105

DRR 1



# STS-4 DETAILED

CDR

PLT

NOTES

MCC

MET DAY 000

R14 (BT)  
MEM  
VERB  
CC  
CONFIC

22:10

ORB 16

22:20

HOUSEKEEPING

22:30

DEL POWER UP (MIL)

R11:H DFI PCM CONT 1,2,3 SCSC (three) - ON

SIMULTANEOUS R/G 1 & R/G 2 DEMO

SIMULTANEOUS R/G 1 & R/G 2 DEMO

UPLINK ORBITER S.V.

22:40

DEL POWER DOWN

R11:H DFI PCM CONT 1,2,3 SCSC (three) - OFF

CONT SEP RUN - PART II (Cue Card)  
(FSO S436-01) Sample 1  
Operator Call (Approx. 22:43)  
Display - PHOTO

22:50

MEAL PREP (Cue Card)  
Prepare DAY 2, MEAL B

23:00

ASCENDING NODE  
ORB: 16  
MET: 000:22:15:55  
LON: 148.5 W

ORIGINAL  
OF POOR QUALITY

# STS-4 DETAILED

NOTES

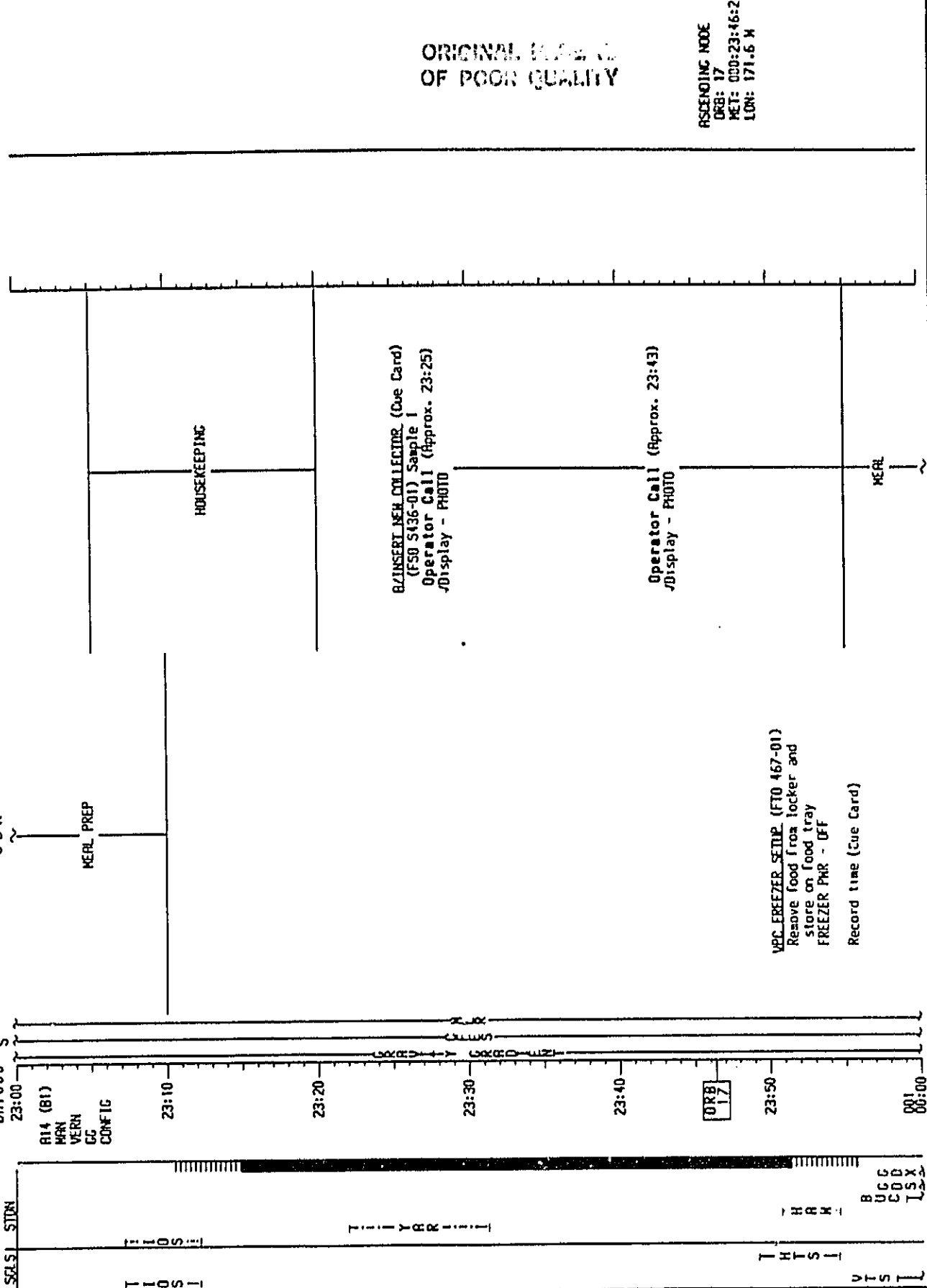
MCC

PLT

CDR

HET  
DAY 000  
23:00

SCAL STON



# STS-4 DETAILED

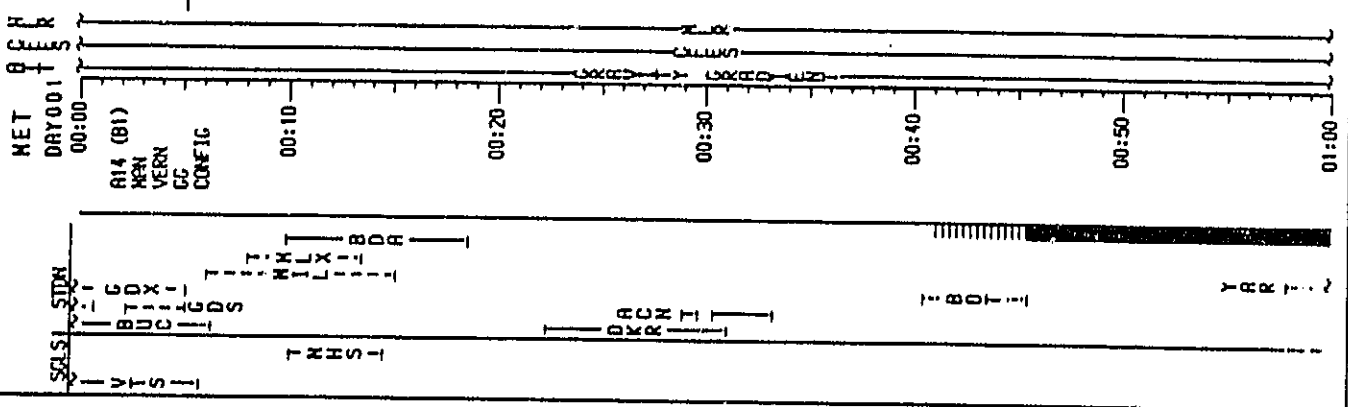
NOTES

MCC

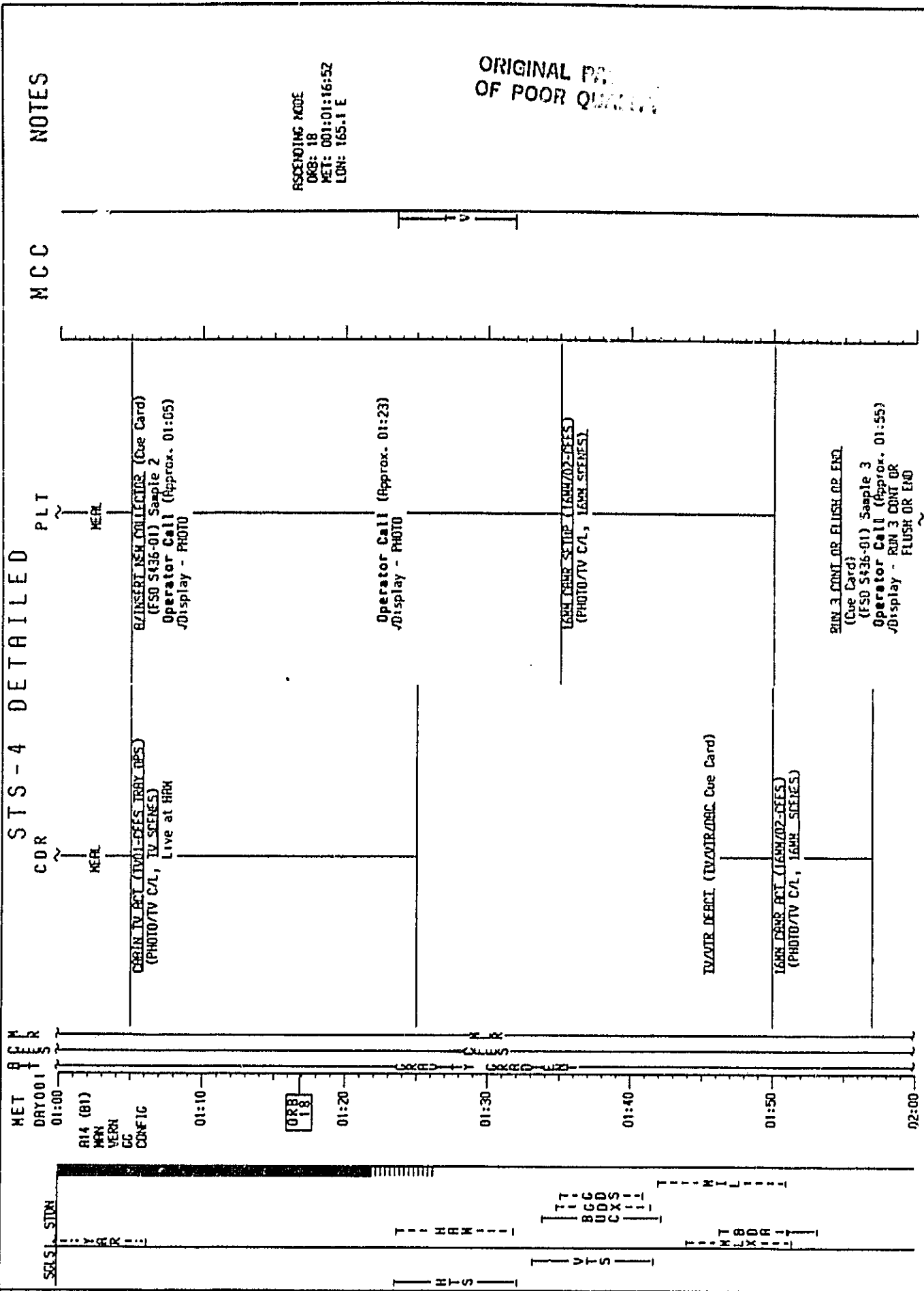
PLT

CDR

ORIGINAL PAGE  
OF POOR QUALITY



RUN 2 CONT OR FLUSH OR END  
(Due Card)  
Operator Call (Approx. 00:15)  
Display - RUN 2 CONT OR  
FLUSH OR END  
Operator Call (Approx. 00:22)  
Display - PHOTO



# STS-4 DETAILED

CDR

NOTES

MCC

PLT

RUN 3 CONT OR FLUSH OR END  
Operator Call (Approx. 02:02)  
Display - PHOTO

WLR DECONTAMINATION (Decal)  
(FSO 442-01)

Record Time: \_\_\_\_\_

ORIGINAL PAGE 13  
OF POOR QUALITY

ASCENDING NODE  
ORB: 19  
MET: 001:02:47:21  
LON: 143.0 E

TPR  
BLOCK DATA  
WEATHER PRO  
8- 5/20-23

RAZINENT NEW SCALING (Use Card)  
(FSO 3425-01) Sample 3  
Operator Call (Approx. 02:45)  
Display - PHOTO

MET  
DAY 001  
02:00

RL4 (81)  
MEN  
VERN  
CC  
CONFIC

02:10

02:20

02:30

02:40

ORB  
19

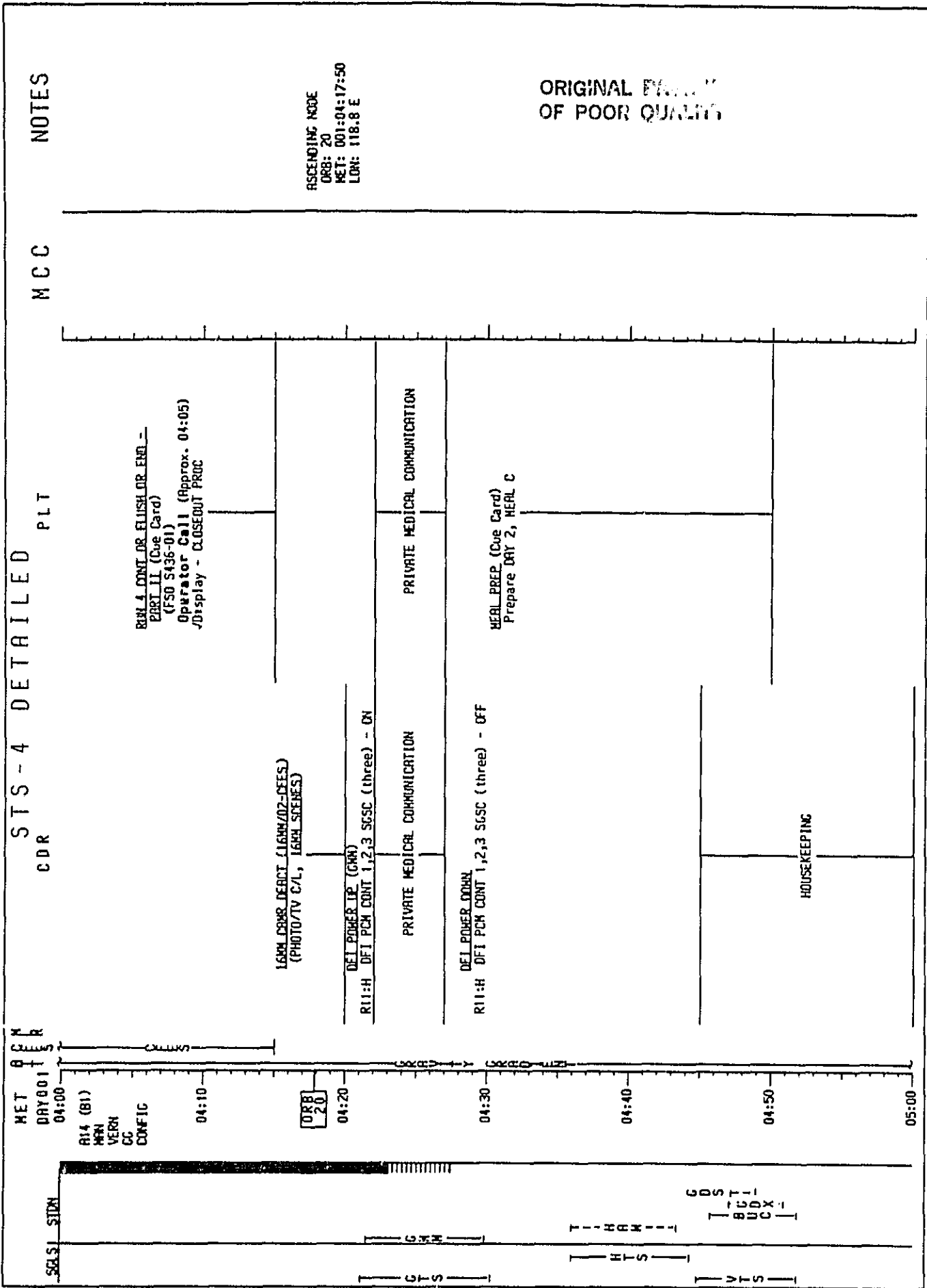
02:50

03:00

**ILP**

## NOTES

ORIGINAL PAGE IS  
OF POOR QUALITY



# STS-4 DETAILED

HET  
DRY001

SLIST

R14 (B1)  
MEN  
VERB  
CC  
CONFIC

PLT

16MM CORP. SETUP (16MM/05-CORP. MAPPING)  
(PHOTO/TV C/L, 16MM SERIES)

MCC

NOTES

ORIGINAL PAGE 2  
OF POOR QUALITY

ASCENDING NODE

ORB: 21

RET: 001:05:48:18

LON: 95.7 E

HERL

HERL



STATION  
MET 0600  
DAY 001

RT 0.2  
DB 1.0  
VERN  
AUTO  
RT 0.2  
DB 1.0

HTS  
HAW

I

RT 0.2  
DB 1.0  
VERN  
AUTO  
RT 0.2  
DB 1.0

# STS-4 DETAILED

NOTES

MCC

PLT

CDR

CH

MEAL

MEAL

CABIN TV SETUP (1002-1004/PLINE)  
(PHOTO/TV C/L, TV SCENES)

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, TAB P1001)  
Record 15 min

EXPERIMENT DOCUMENTATION  
(OPERATIONS C/L, TAB D)

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, TAB P1001)

GRAVITY GRADIENT FREE BRIEF, OPS 2  
(ORBIT OPS C/L, RCS)  
(FTO 477-02)  
Perform Step 3:  
(VEHICLE RECOVERY & FES RESTART)

AUTO HMR TO DUAL ALIGN ATT  
HMR OPTION: R - 212.5  
P - 77.9  
Y - 44.4  
DAP: A/AUTO/VERN  
(06:52) Initiate HMR

RADIATORS STOW/DEPLOY  
(FTO 466-01)  
(ORBIT OPS C/L, TAB P1001)  
Perform Step 1 - STOW RADIATORS

ORIGINAL PAGE 15  
OF POOR QUALITY

1953 12 13

**CDR**

PLT

## NOTES

CCM

CDR  
AUTO MNVR TO INU ALIGN ATT

INFL ALIGNMENT - S TRK  
(ORBIT OPS C/L, ENC)  
STAR ID: -Y: 27, DENEB  
-Z: 54, DIPHDA  
ANC DIF: 83.7  
REPORT: INFL ALIGN RESULT

5. TRK OPS DURING H2O PUMP  
(FTO 473-01)  
(ORBIT OPS C/L, GNC ETO's)

0.4 DEG/SEC PTC XPRD - INITIATE  
(PTO 412-01)  
MNR OPTION: R \* 132.8  
P \* 236  
Y \* 60.1  
DAP: R/AUTO/VERN  
(07:49) Initiate MNR

## HOUSEKEEPING

SUPPLY WATER DUMP  
(ORBIT OPS C/L, ECLS)  
Dump TKS A & B  
Dump to: \_\_\_\_\_ QTY B \_\_\_\_\_  
QTY A = \_\_\_\_\_ QTY C \_\_\_\_\_  
FPC FREEZER IFSL (FTO 4) \_\_\_\_\_  
Record elapsed time in \_\_\_\_\_  
reading (Cue Card) \_\_\_\_\_  
FREEZER PHR - ON \_\_\_\_\_

Record time, freezer temp, condenser temp (Cue Card). Repeat once per minute for 15 minutes or until temp stabilizes.

WATER SAMPLE FREEZING (FTO 467-03)  
Unstow H2O used drink container  
and fill with H2O  
Insert container into freezer  
RECORD TIME \_\_\_\_ / \_\_\_\_ : \_\_\_\_

UPDATE  
H2O SPLY DUMP  
QTY TK A B B

Stars 27 & 54  
available from  
1/07:01 to 1/07:14

**RPT: IMU ALIGN RESULTS**

ASCENDING MODE  
OR8: 22  
MET: 001:07:11  
LOW: 72.5 E

**THE BUREAU**

TRK ID:	1	2	ANC ERR
$\Delta X$	( )	( )	( )
$\Delta Y$	( )	( )	( )
$\Delta Z$	( )	( )	( )

**EXECUTION TIME:**

ORIGINAL. PAGE 11  
OF POOR QUALITY

UPLINK  
ORBITER S.V.  
TPR  
BLOCK DATA  
WEATHER PAD  
B- 6/24-27

X-0  
C-1  
Q-4

NET  
DAY001

SQLSI STDN

## NOTES

CCM

PLT

When MNVR to PIC ATT complete,  
CHANGE CAP A:  
ROT DISC RATE VERN - 0.4 °/SEC  
BODY VECT +4

(08:07) Initiate RDT

FUEL CELL PURGE - AUTO (Cue Card)

C02 ASSURER REPLACEMENT  
(4 into B)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

UPLINK  
SPC LOAD -  
1ST COMM  
ALERT  
CHG  
RCOR SLEEP  
CONFIG

ORIGINAL PAGE 1  
OF POOR QUALITY

ASCENDING NODE  
ORB: 23  
MET: 001:08:49:15  
LON: 49.4 E

# STS-4 DETAILED

MET  
DAY 001

SCS1 SDN

NOTES

MCC

PLT

CDR

R2 (81)  
AUTO  
VERH  
RT 0.4  
DB 1.0

TGTS I

SKN I I

THS I

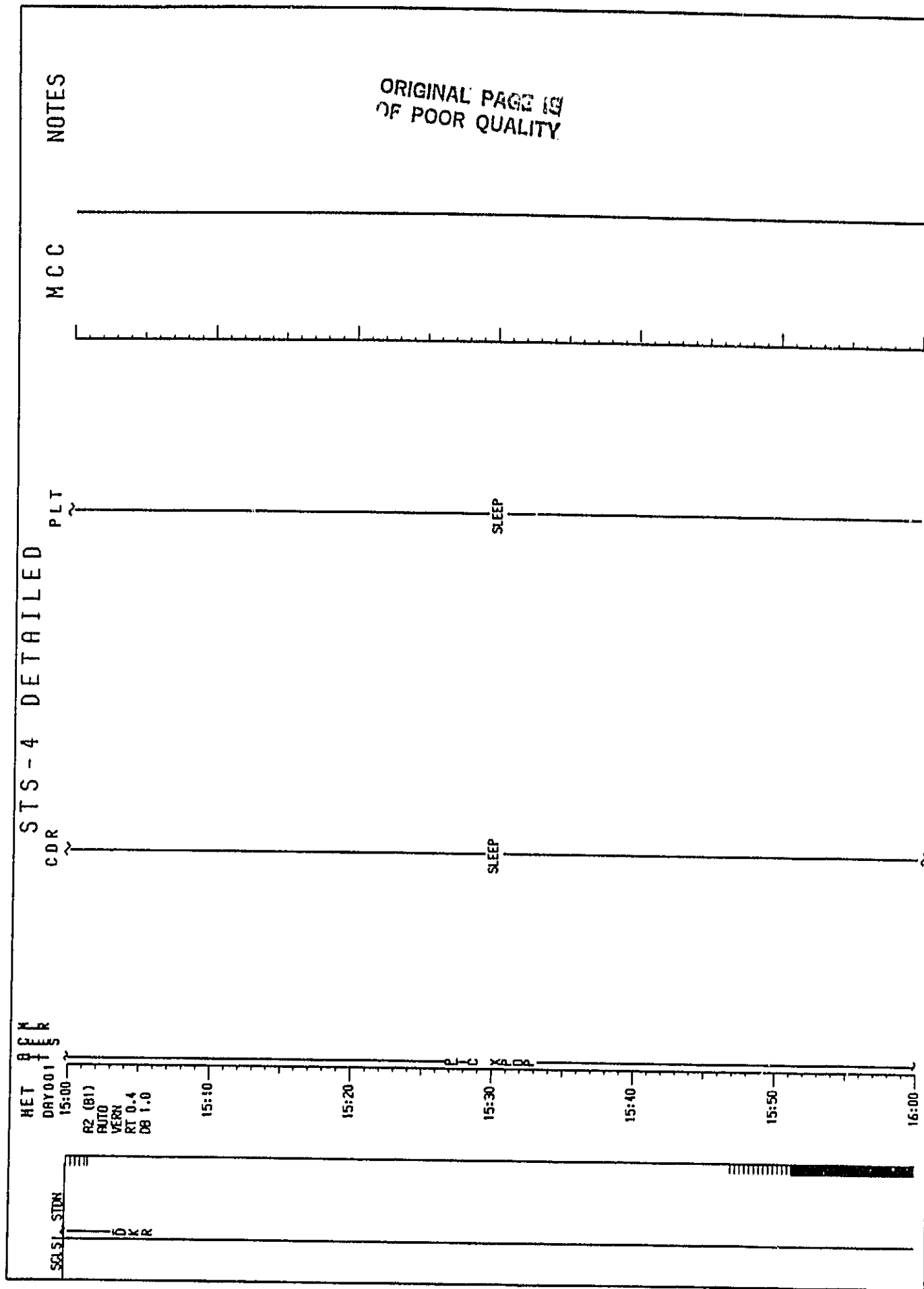
THN I I

SLEEP

SLEEP

ORIGINAL PAGE 10  
OF POOR QUALITY





STS-4 DETAILED

NOTES

334

173

CDR

MET DAYOOL  
8-1

NO. 15735

ASCENDING NODE  
 DRG: 28  
 MET: 001:16:21.37  
 LON: 66.3 W

ORIGINAL FILE  
OF POOR QM

UPLINK  
ORBITER S.V.  
CND  
RCOR PARK  
CONFIC  
UPLINK  
SPC LOAD -  
- CLEAR CHAN  
BLRT

steps!

**8315**

RZ (B1)  
AUTO  
VERH  
RT 0.4  
DB 1.0

8208

XXXX |-----  
 XXXX |-----  
-XXXX-	-----	-----

MET PCM  
DAT 001

SGLSI STDN

RZ (B1)  
AUTO  
VERN  
RT 0.4  
DS 1.0

CDR  
POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PLT

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

NOTES

MCC

ORIGINAL PATH IS  
OF POOR QUALITY

ORB  
29

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

ASCENDING NODE  
GRB: 29  
MET: 001:17:52:05  
LON: 89.4 W







# STS-4 DETAILED

NET  
DAY 001

STN

CDR

PLT

NOTES

NCC

20:00  
A1 (B1)  
AUTO  
VERN  
RT 0.2  
DB 1.0

20:10

20:20  
(A1) B6  
CONTIN  
SURVEY

20:30

20:40

20:50

21:00

DUAL C2 OPS OPS.  
(ORBIT OPS C/L, DES)

RHS POWERUP/CHECKOUT

IECH INSERTH  
(PORS OPS C/L, IECH INSERTH)

HK

IECH CONTINUATION SURVEY  
(FTO 453-01)  
(PORS OPS C/L, CONTIN SURVEY)

IECH CONTINUATION SURVEY  
(FTO 453-01)  
(PORS OPS C/L, CONTIN SURVEY)

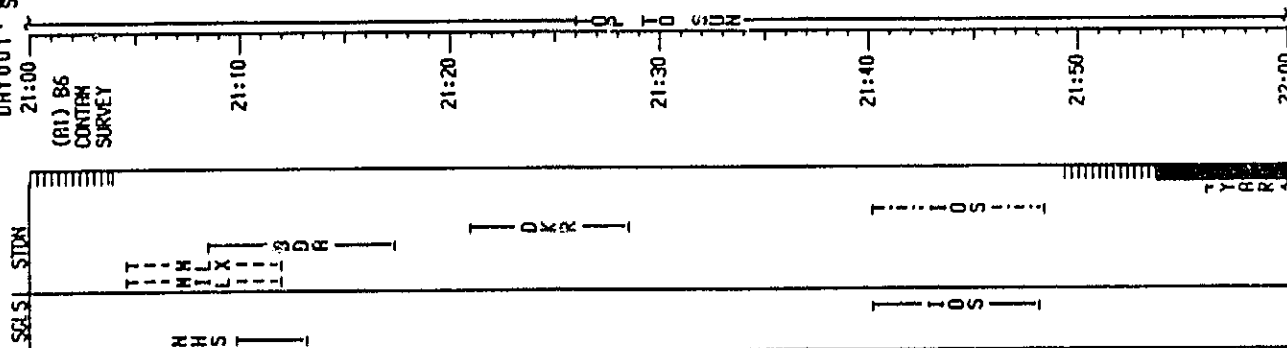
ORB  
31

ORIGINAL PAGE 15  
OF POC QUALITY

ASCENDING NODE  
ORB: 31  
MET: 001:20:53:02  
LON: 135.7 X

# STS-4 DETAILED

MET  
DAY 001



CDR

PLT

MCC

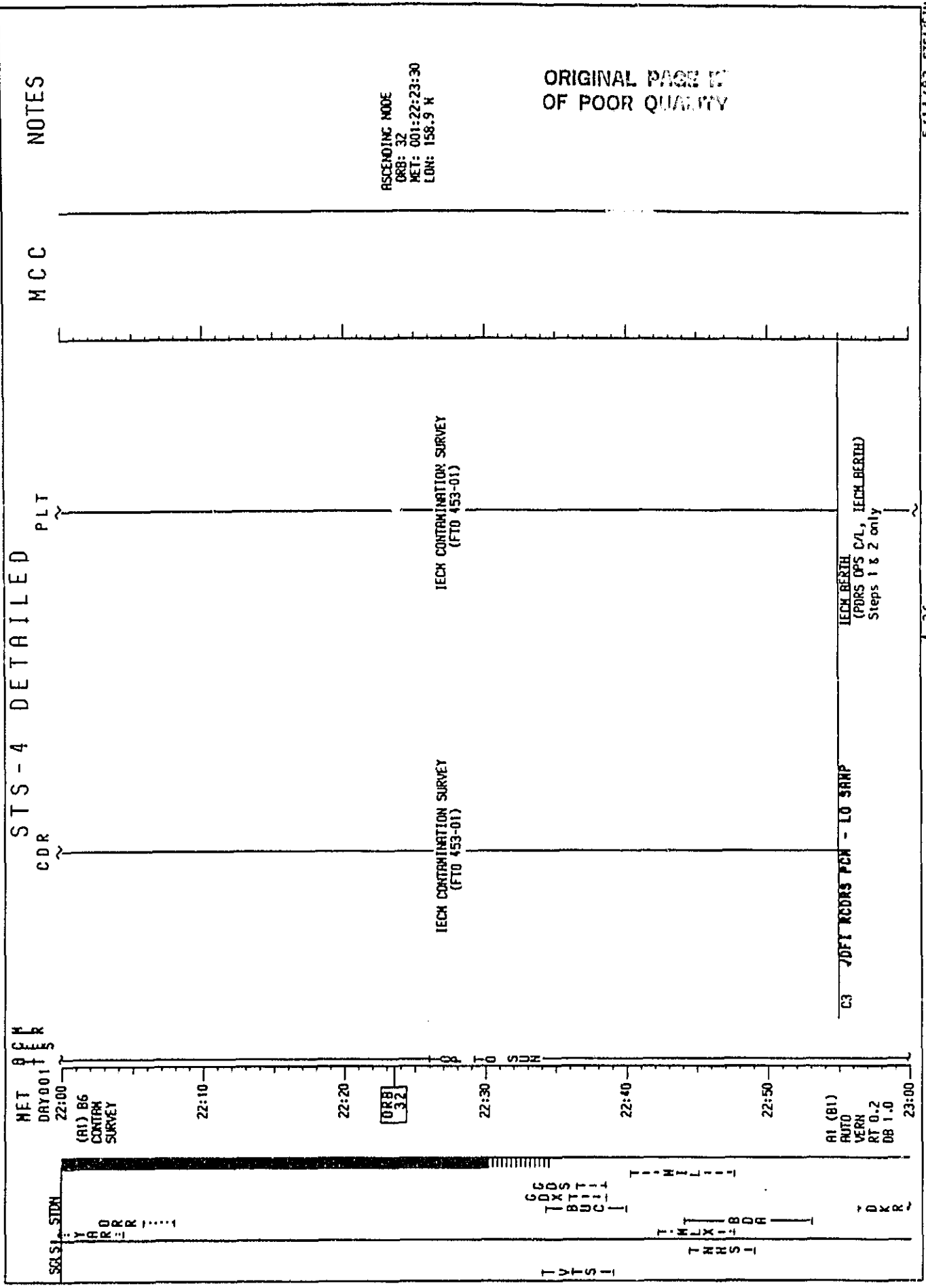
NOTES

UPLINK  
ORBITER S.V.  
TER  
BLOCK DATA  
WEATHER PAD  
B- 8/32-35

ORIGINAL PAGE 13  
OF POOR QUALITY

TECH CONTINUATION SURVEY  
(FTO 453-01)

TECH CONTINUATION SURVEY  
(FTO 453-01)



# STS-4 DETAILED

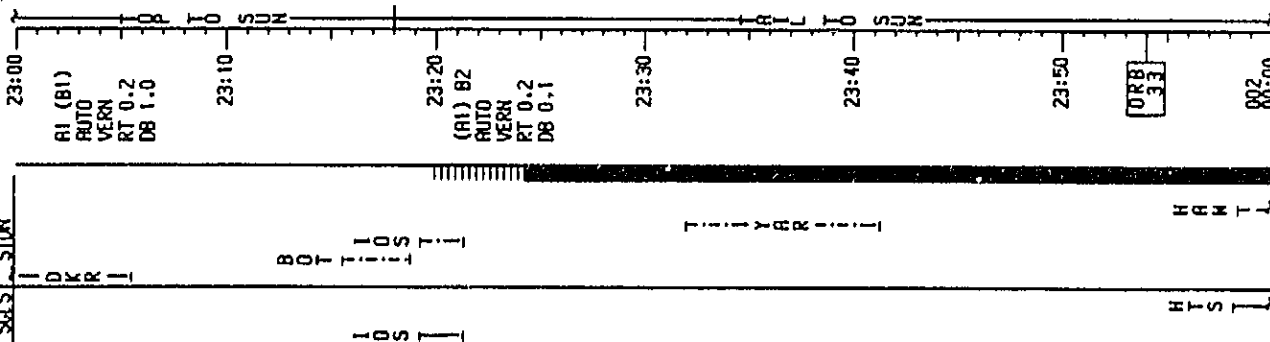
CDR

PLT

NOTES

MCC

MET 0001  
DAY 001



HERL PREP (Cue Card)  
Prepare DAY 3, HERL B

TECH BERTH

Change DAP B: DB RIT VERN - 0.1 DB  
AUTO MNR ID - XSL RIT (FTO 412-01)  
MNR OPTION: R \* 192  
P \* 278.9  
Y \* 336.8

DAP: B/AUTO/VERN  
(23:18) Initiate MNR

RADIATORS SIGN/DEPLOY  
(FTO 466-01)  
(ORBIT OPS C/L. ELBD EIDJ)  
Perform Step 2 - DEPLOY RADIATORS

PRIVATE MEDICAL COMMUNICATION

PRIVATE MEDICAL COMMUNICATION

VCC FREEZER TEMP READLINE  
(FTO 467-02)  
Record time, freezer temp,  
condenser temp (Cue Card)

CABIN TV ACT (TV02-TECH/PLINE)  
(PHOTO/TV C/L, TV STERES)  
VTR

ORIGINAL PAGE 33  
OF POOR QUALITY

ASCENDING NODE  
ORB: 33  
MET: 001:23:53:58  
LON: 177.9 E



# STS-4 DETAILED

MET  
01:00  
01:10  
01:20  
01:30  
01:40  
01:50  
02:00

CDR

PLT

NOTES

MCC

SOLST STDN

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

R11 (B5)  
PLUME  
SURVEY

TECH PLUME SURVEY  
(FTD 454-01)  
(PDRS OPS C/L, PLUME SURVEY)

TECH PLUME SURVEY  
(FTD 454-01)  
(PDRS OPS C/L, PLUME SURVEY)

TECH INSERTH  
(PDRS OPS C/L, TECH INSERTH)  
Steps 3 & 4 only

ASCENDING NODE  
ORB: 31  
MET: 002:01:24:26  
LDN: 154.8 E

ORIGINAL PAGE 13  
OF POOR QUALITY

UPLINK  
ORBITER S.V.



# STS-4 DETAILED

MET ACN  
DAY002

SCSI SUM  
WMB  
ILD  
LXR

02:00  
R11 (B5)  
PLUME  
SURVEY

02:10

02:20

02:30

02:40

02:50

03:00

ORB  
35

NOTES

MCC

PLT

CDR

ORIGINAL PAGE IS  
OF POOR QUALITY

TECH PLUME SURVEY  
(FTD 454-01)

TECH PLUME SURVEY  
(FTD 454-01)

ASCENDING NODE  
ORB: 35  
MET: 002:02:54:54  
LON: 131.6 E

TPR  
BLOCK DATA  
WEATHER PRO  
B- 9/36-39

MET  
DAY002

CCM

PLT

CDR

MET  
DAY002

NO. 1575

A11 (85)  
PLUME  
SURVEY

03:10 -  
(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

03:20 -

03:30 -

03:40 -

03:50 -

AI (B2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

AUTO MNVR TO INT ALGN ATT  
 MNVR OPTION: R - 256.2  
                   P - 13.7  
                   Y - 345.8  
 DAP: R/AUTO/VERN  
 (03:56) Initial HV8

TECH PLUME SURVEY  
(FTO 454-01)

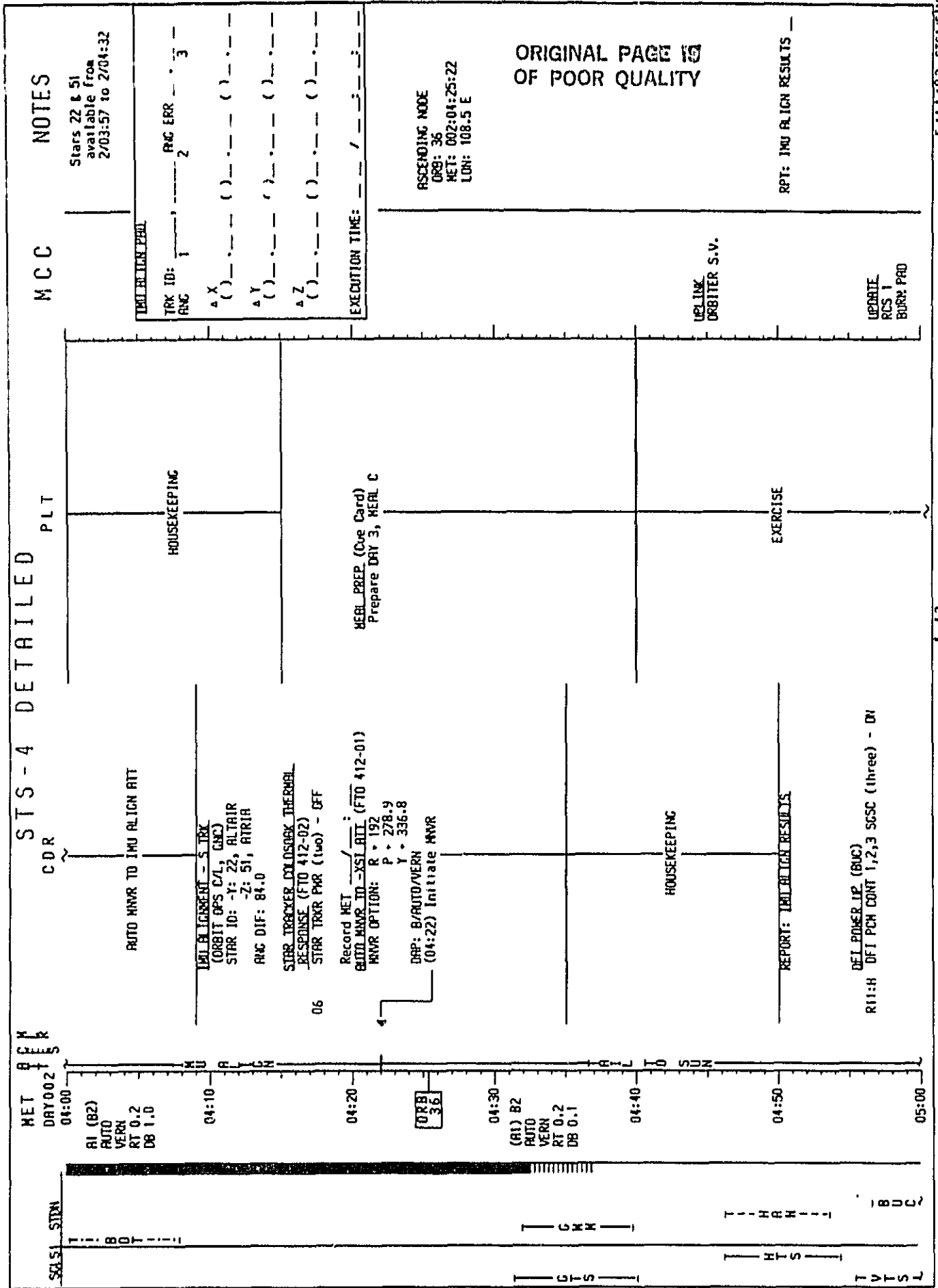
IECH\_BERTH  
(PORS OPS C/L, IECH\_BERTH)

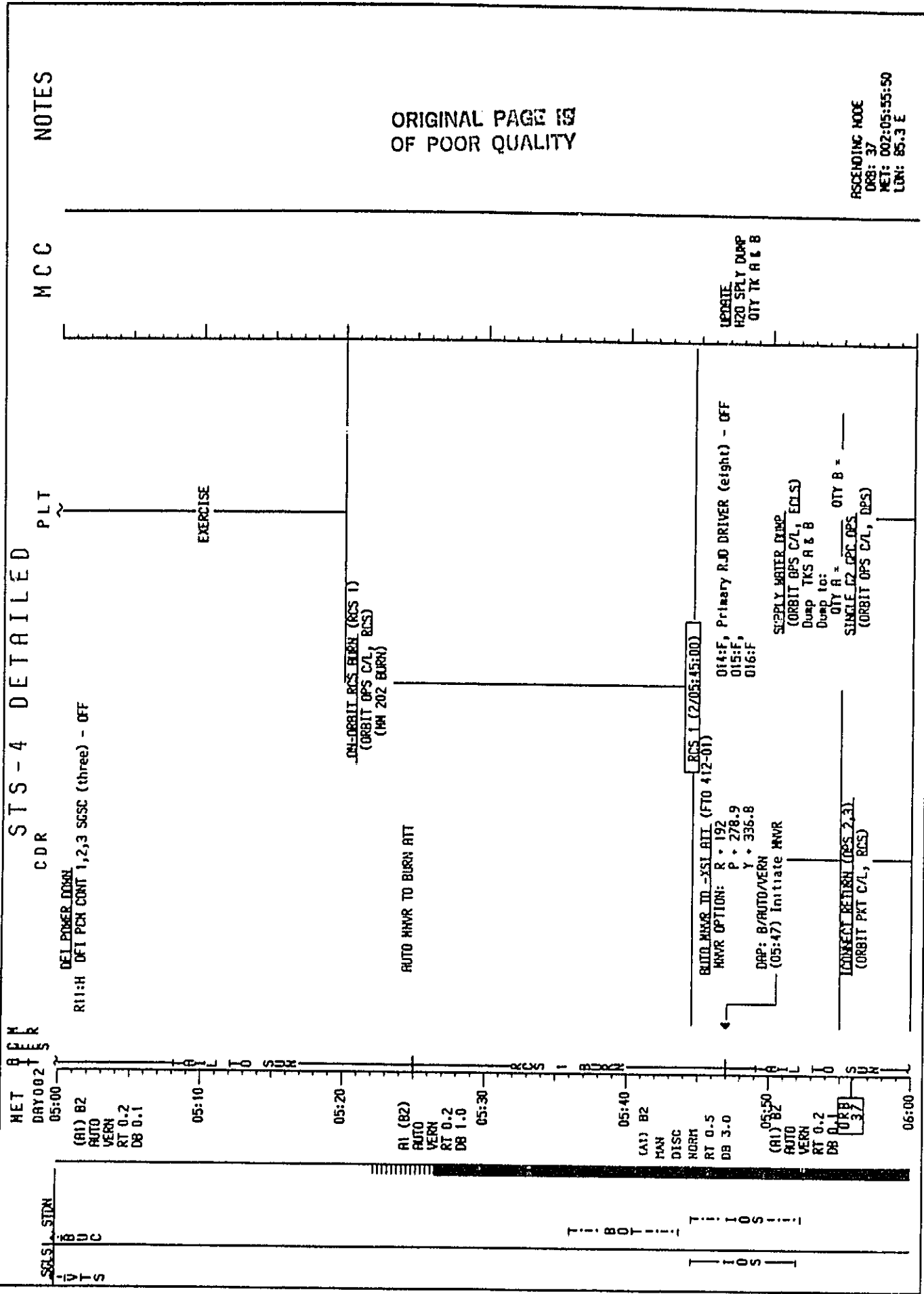
**RMS POWERDRA  
(PDRS OPS C/L, RMS PHRON)**

## EXERCISE 1

ORIGINAL PAGE IN  
OF POOR QUALITY

**4-41**





ORIGINAL PAGE 19  
OF POOR QUALITY

ASCENDING NODE  
ORB: 37  
MET: 002:05:55:50  
LON: 85.3 E

5/11/82 STS4/FIN

4-43

NET  
DAY002

## NOTES

334

179

CR

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

\_\_\_\_\_

453

— 五 —

- - - H E X - - -

ଅଧ୍ୟାୟ ୧୦

ORIGINAL PAGE IS  
OF POOR QUALITY

MET 0002  
DAY 002

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

STIM

CDR  
PLT

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, IRR P/2/02)

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, IRR P/2/02)

NOTES

MCC

MCC ONLY  
COORD CEN/FDA  
LIMITS CLEARUP  
FOR CREW SLEEP

EUEL CELL PIERCE - RIND (Due Card)

CO2 ABSORBER REPLACEMENT  
(5 into A)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

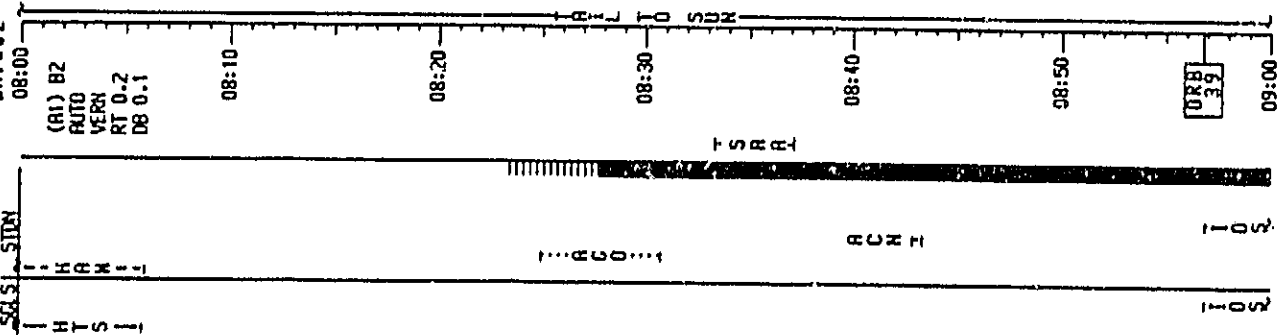
ASCENDING NODE  
ORB: 38  
MET: 002:07:26:18  
LON: 62.2 E

ORIGINAL OF FOUR COPIES

DIPLINK  
SPC LOAD -  
1ST COMM  
ALERT  
CHD  
RCOR SLEEP  
CONFIC

# STS-4 DETAILED

MET  
DAY 002



NOTES

MCC

PLT

CDR

PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

SLEEP

SLEEP

TPR  
BLOCK DATA  
WEATHER PRO  
B-10/40-43

ORIGINAL PAGE 13  
OF POOR QUALITY

ASCENDING NODE  
008: 39  
MET: 002:08:56:46  
LON: 39.0 E

5/14/82 STS-4 IN

4-46

⑤



STS-4 DETAILED

NOTES

CCM

PLT

५३३६

**UPLINK  
ORBITER S.V.**

COR

०३८

LET  
DAY002  
9  
C  
JFK

(A1) B2  
RJTJ  
VERN  
RT 0.2  
DB 0.1

SECT 15 STD 3

U.S. DEPT. OF AGRICULTURE

工部局 1-1

— ۱۵۱ —

**ト 五 十 一**



# STS-4 DETAILED

CDR

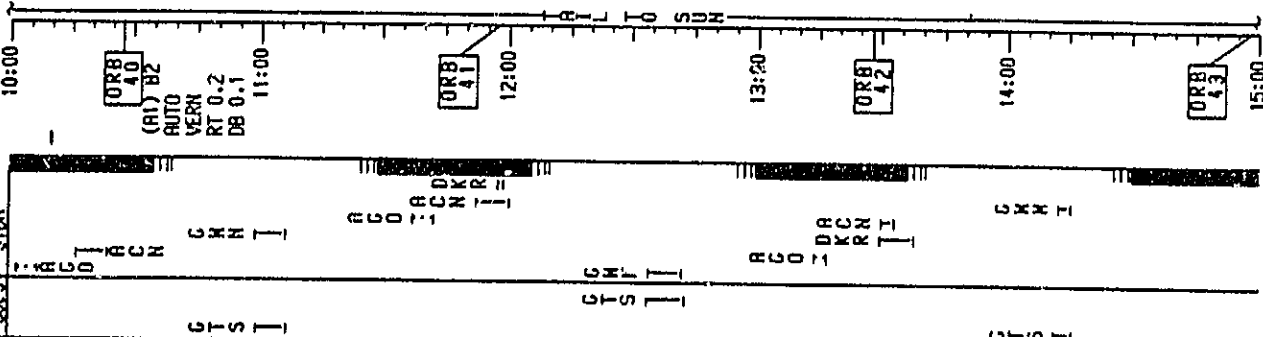
PLT

NOTES

MCC

MET 0000  
DAY 002

SOLSI STDN



ORIGINAL PAGE 13  
OF 1000 PAGES

ASCENDING NODE  
ORB: 40  
MET: 002:10:27:14  
LON: 15.9 E

ASCENDING NODE  
ORB: 41  
MET: 002:11:57:41  
LON: 7.2 W

ASCENDING NODE  
ORB: 42  
MET: 002:13:28:09  
LON: 30.3 W

ASCENDING NODE  
ORB: 43  
MET: 002:14:58:51  
LON: 53.4 W

UPLINK  
ORBITER S.V.

TE3  
BLOCK DATA  
HEATHER PRO  
2-11/44-47

SLEEP

SLEEP

# STS-4 DETAILED

MET  
DAY 002

SOL STDA

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

DKR M A D T

PLT

SLEEP

CDR

SLEEP

NOTES

MCC

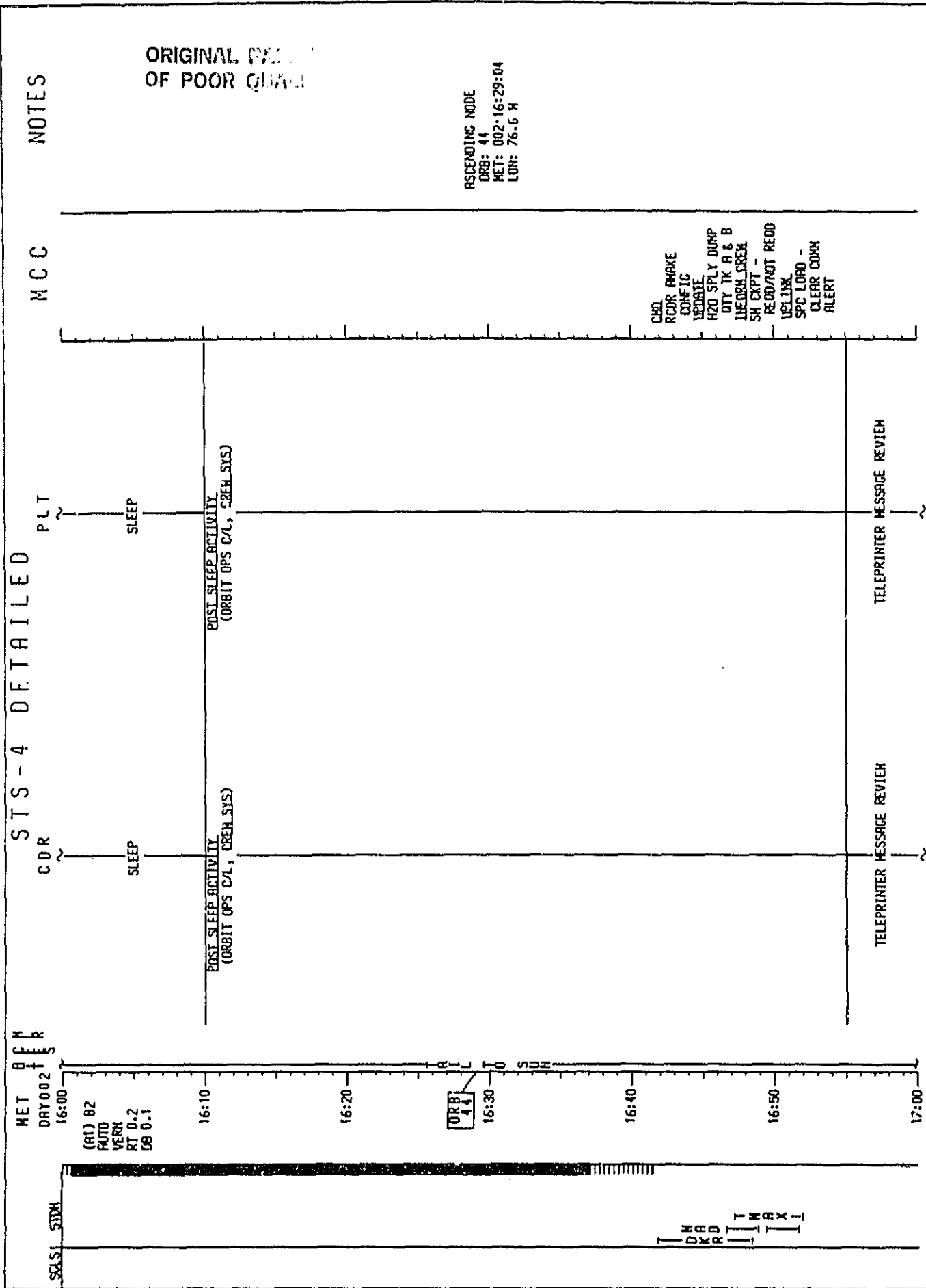
ORIGINAL FILE IS  
OF POOR QUALITY

4-49

5/14/82 SISV/EIN

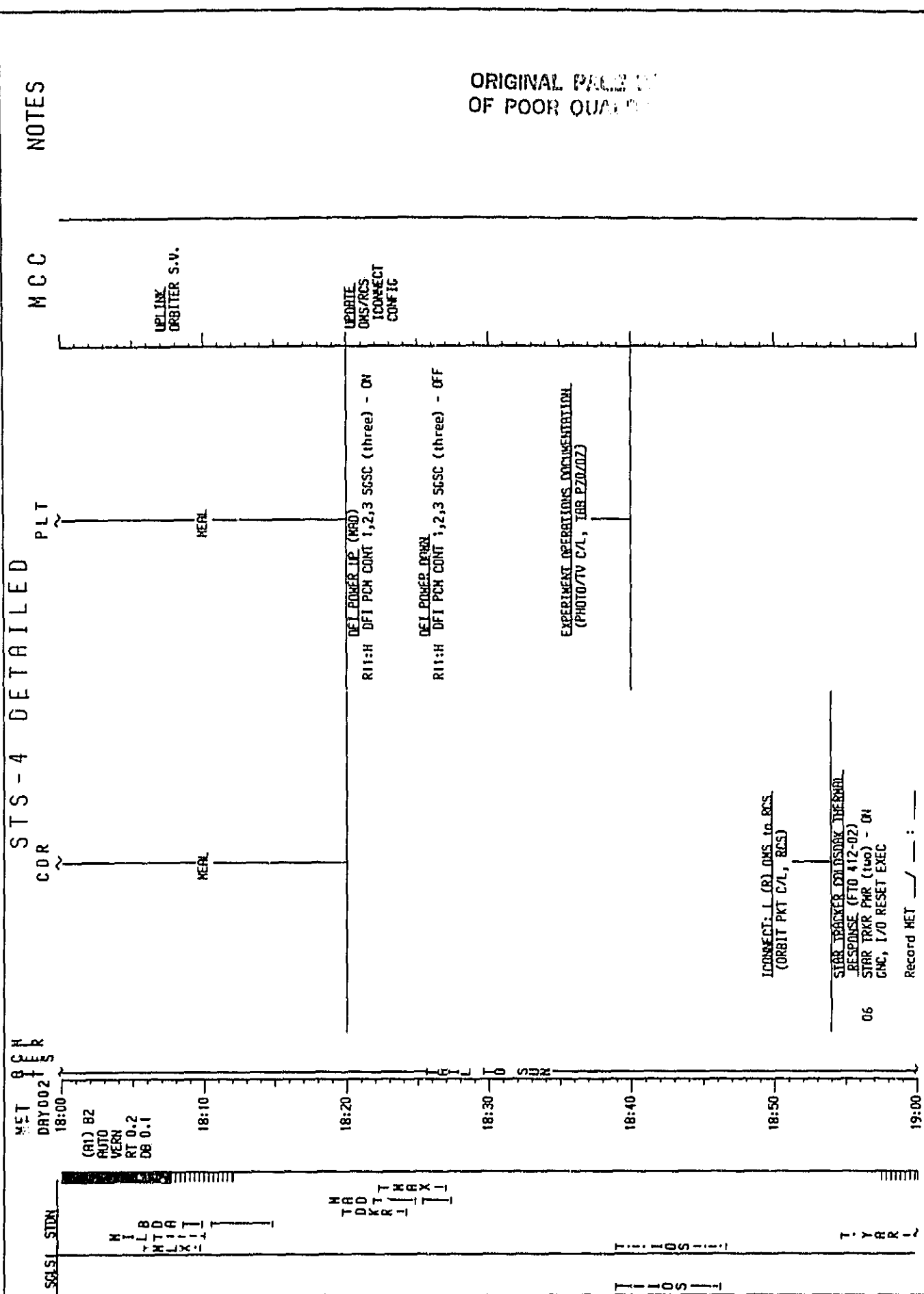
FLT DAY 4

STS-4 DETAILED

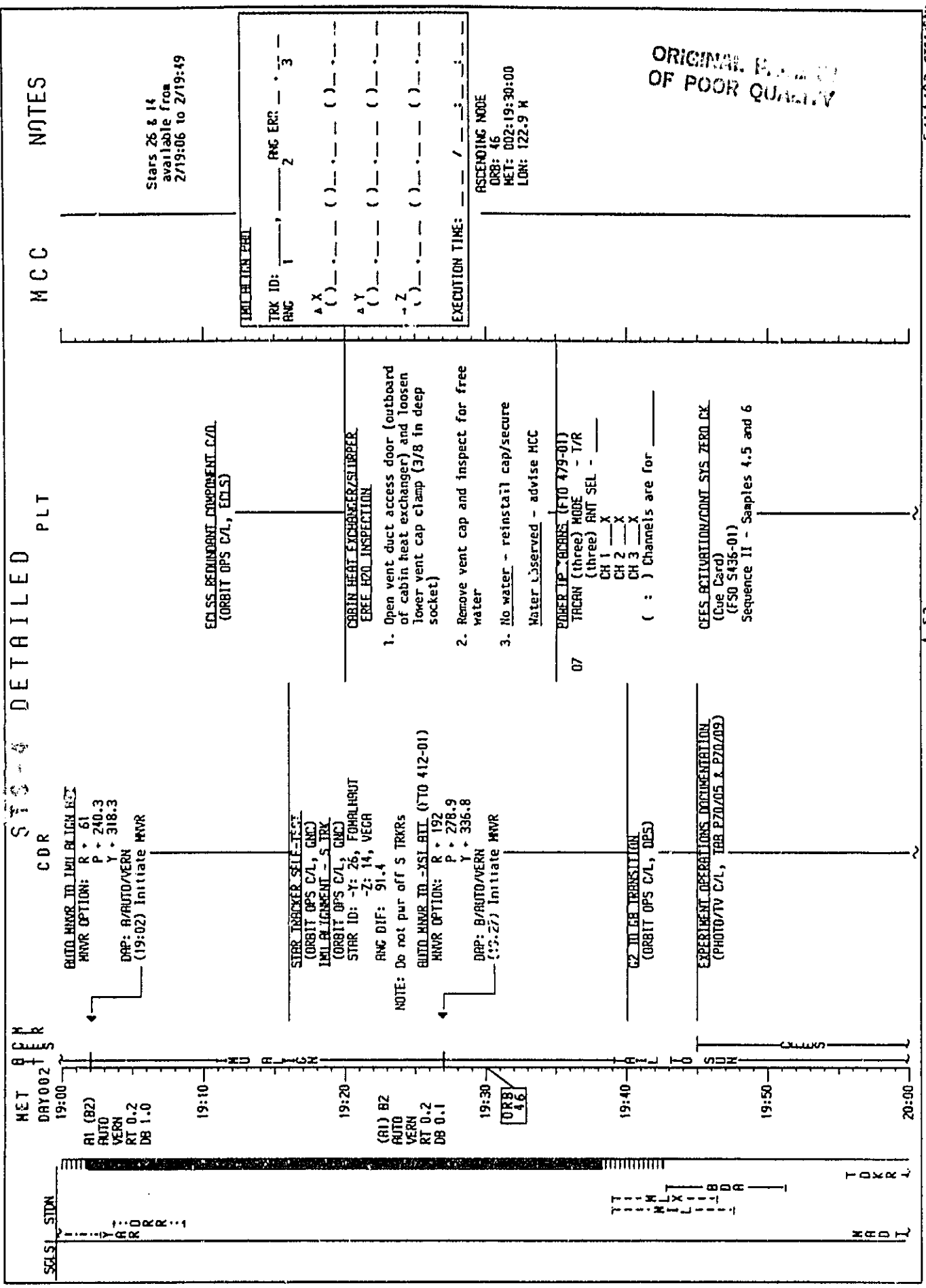




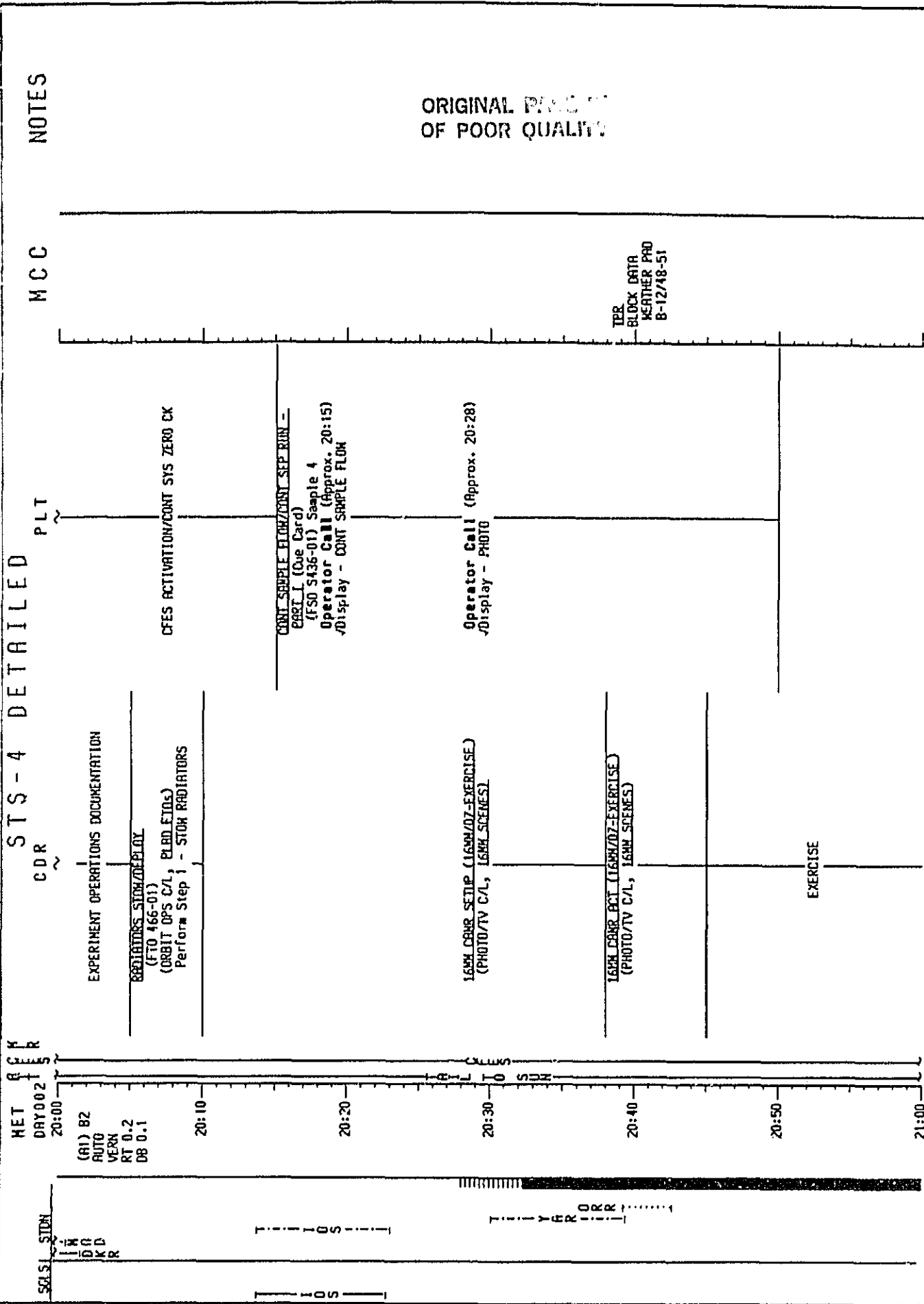
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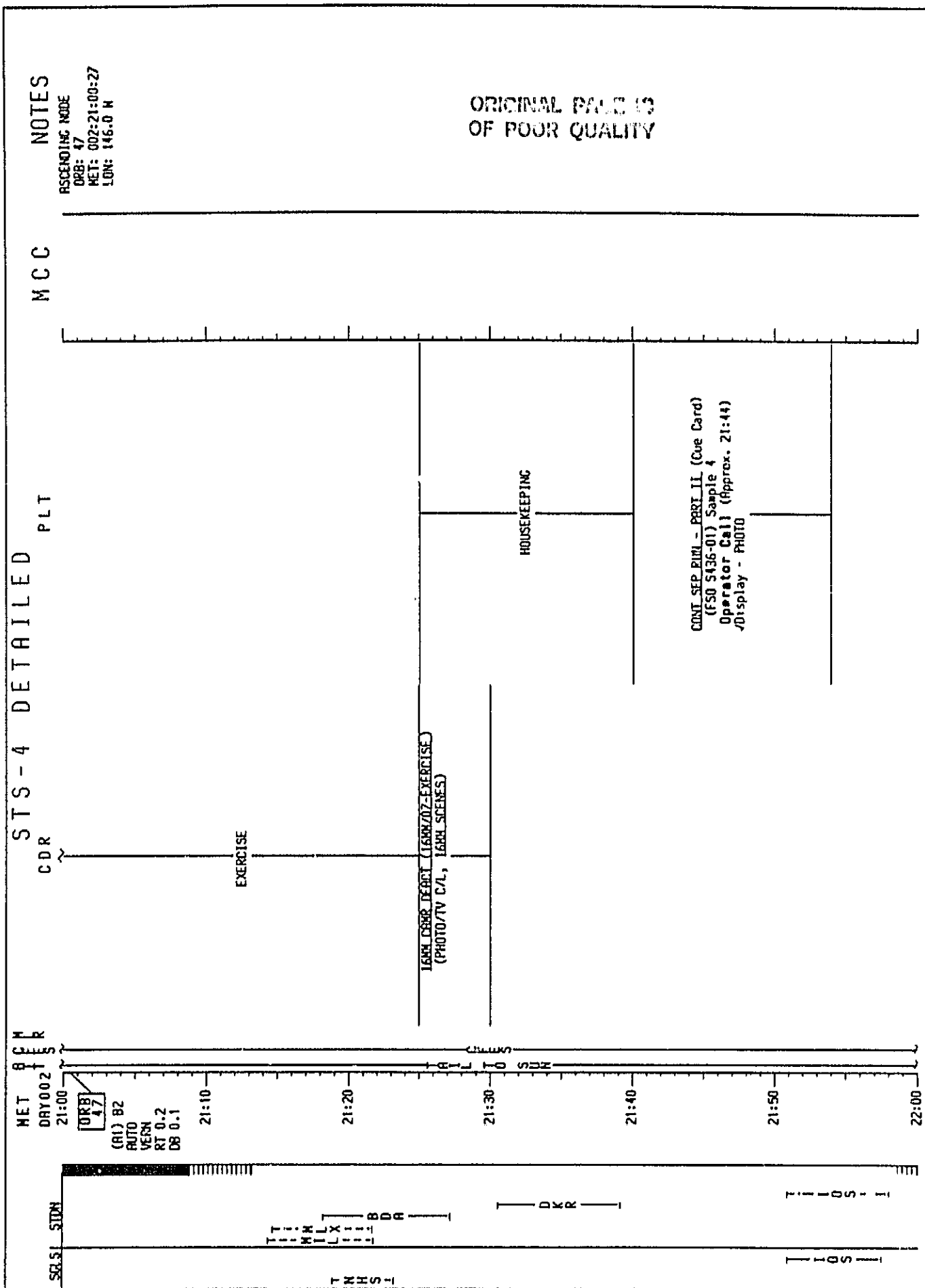


ORIGINAL PAGE 1  
OF POOR QUALITY



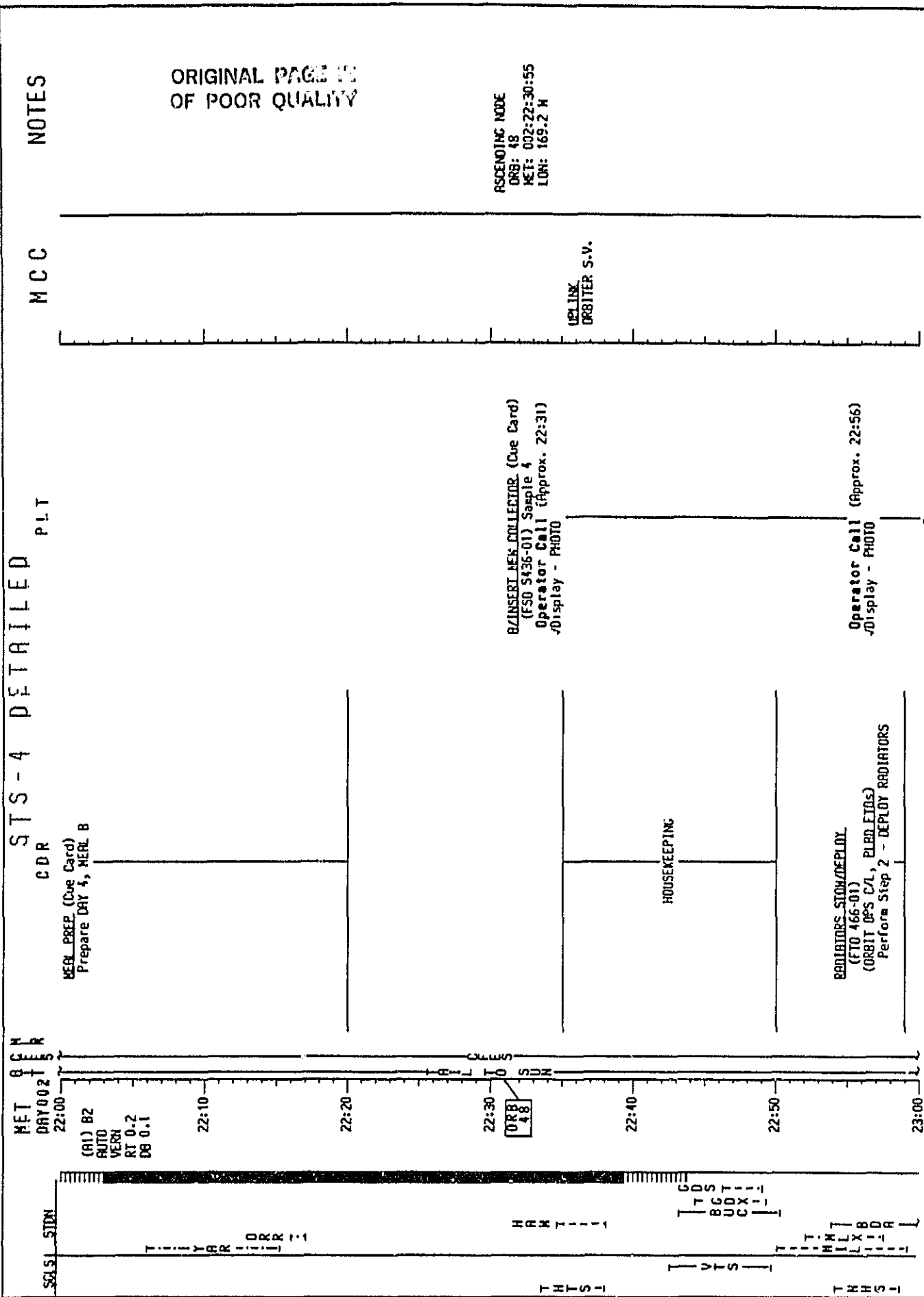
# STS-4 DETAILED







# STS-4 DETAILED



# STS-4 DETAILED

CDR

MET  
DAY 002

NOTES

MCC

PLT

R/INSERT NEW COLLECTOR

MEAL

MEAL

RUN 5 COUNT OR FLUSH OR ENL  
(Cue Card)  
(FSD 5435-01) Sample 5  
Operator Call (Approx. 23:42)  
JDisplay - RUN 5 COUNT OR  
FLUSH OR ENL  
Operator Call (Approx. 23:49)  
JDisplay - PHOTO

SCSI STION

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

23:10

23:20

23:30

23:40

23:50

003  
00:00

B D A

DA

KCN

P B O T I

T I I Y A R I I I

# STS-4 DETAILED

MET 8 C M  
DAY 003

NOTES

MCC

PLT

CDR

ASCENDING NODE  
ORB: 49  
MET: 003:00:01:22  
LON: 167.6 E

RUN 5 CONT OR FLUSH OR END

MEAL

MEAL

CABIN TV SETUP (TV03-CFES SMP OPS)  
(PHOTO/TV C/L, TV SCENES)

MEAL

PRIVATE MEDICAL COMMUNICATION

PRIVATE MEDICAL COMMUNICATION

B/INSERT NEW COLLECTION (Due Card)  
(FSD S435-01) Sample 5  
Operator Call (Approx. 00:32)  
Display - PHOTO

CB TO C2 TRANSITION  
(ORBIT OPS C/L, OPS)

07 SLEEP DOWN JERKINS (FTO 479-01)  
TRACIN (three) MODE - OFF  
(three) ANT SEL - AUTO

DUAL C2 CPC OPS  
(ORBIT OPS C/L, OPS)

CABIN TV ACT (TV03-CFES SMP OPS)  
(PHOTO/TV C/L, TV SCENES)  
Live at HEM, CDS, MIL

UPDATE  
RIS 2  
BURN PAD

Operator Call (Approx. 00:57)  
Display - PHOTO

ORIGINAL PAGE  
OF POOR QUALITY

10

## NOTES

CCC

**PLT**

**COR**

NET 13H  
CITY OF  
HARRIS

1

(A1) B2  
AUTO  
VERA  
RT 0.2  
DB 0.1

A1 (B2)  
 AUTO  
 VERN  
 RT 0.2  
 DB 1.0

A1 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

RI (B2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

C981N TV ACT  
Live at HAM, GDS, HIL  
A/INSERT NEW COLLECTOR

ON-ORBIT RCS BURN (RCS 2)  
(ORBIT OPS C/L, RCS)  
(NH 202 BURN)

**AUTO MAYR TO BURN ATT**

PCS 2 (3/01:32:00)

014:E. Primary R in NGIVER (eiobt) -

D15:F

**QUIT MNR TO POST BURN ATT**  
**(Use PAD ATT)**  
**DAP: A/AUTO/VERN**  
**Initiate MNR**

SINGLE G2 CPC OPS

PLAN 6 CONT OF FLUSH OR END

(Cue Card)  
(FSO 5436-01) Sample 6  
Operator Call (Approx. 01:43)  
Display - RUN 6 CONT OR  
F015H 00 515

Operator Call (Approx. 01:50)  
Misolay - PRATT

OF POLICE

ASCENDING NODE  
ORB: 50  
MET: 003:01:31:50  
LDN: 144.4 E

# STS-4 DETAILED

CDR

PLT

NOTES

MET  
DAY 003

SCSLS  
VTS  
BDDTT  
UXXS  
C

(A1) B2  
AUTO  
VERN  
RT 0.2  
DS 0.1

BLVD MWR ID - XSL AIL (FTO 412-01)  
MWR OPTION: R - 192  
P - 278.9  
Y - 336.8  
DAP: B/AUTO/VERN  
(02:07) Initiate MWR

RUN 6 CONT OR FLUSH OR END

VEE FREEZER TEMP. READING  
(FTO 467-02)  
Record time, freezer temp,  
condenser temp (Due Card)

IVZUR DEBEL (IVZUR/DEB Due Card)

DEL POWER UP (ACH)  
R11:H DEL PCH CONT 1,2,3 SCSC (three) - ON

DEL POWER DOWN

R11:H DEL PCH CONT 1,2,3 SCSC (three) - OFF

QUINSEPT AER COLLECTOR (Due Card)  
(FSO 5435-01) Sample 6  
Operator Call (Approx. 02:33)  
Display - PNC

Operator Call (Approx. 02:58)  
Display - PNC

ORIGINAL PAGE 10  
OF POOR QUALITY

# STS-4 DETAILED

MET BCK

SQSI STDN

DAY003

CDR

PLT

NOTES

MCC

RESONATING MODE  
DBS: 51  
MET: 003:03:02:17  
LEN: 121.3 E

TER  
BLACK DATA  
WEATHER PWD  
3-13/52-55

A/INSERT NEW COLLECTOR

HOUSEKEEPING

REEL PREP (Cue Card)  
Prepare DRH 4, MEAL C

EXERCISE

RUN 7 CONT OR FLUSH OR END  
ERR 1 (Cue Card)  
(FSD 5436-01)  
Operator Call (Approx. 03:44)  
Display - RUN 7 CONT OR  
FLUSH OR END

ORIGINAL RECORD  
OF POOR QUALITY



# STS-4 DETAILED

NOTES

MCC

PLT

CDR

MET  
DAY 003

SCS  
HTS

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

05:10

05:20

05:30

05:40

05:50

06:00

ORIGINAL PAGE IS  
OF POOR QUALITY

RPT: IMU ALIGN RESULTS

EXPERIMENT DEFERRATIONS DOCUMENTATION  
(PHOTO/TV C/L, TBR P70/10)

REPORT: IMU ALIGN RESULTS  
RECOMMENDATION: C/L LAMP TEST  
(ORBIT OPS C/L, EPS)

5/14/82 STS4/FIN



NET 0031

STS-4 DETAILED

PLT

CDR

SCS

DAY 0031

EIRE/SNORE DETECT/SUPPRESS TEST  
(ORBIT OPS C/L, EES)

Q12 RESORDER REPLYMENT  
(6 into 8)

UPB 53

(AT) B2  
AUTO  
VERB  
RT 0.2  
DB 0.1

FUEL CELL PUSGE - AUTO (Cue Card)

06:10

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

06:20

06:30

06:40

06:50

07:00

MCC

MCC ONLY  
CDR/CN/EDR  
LIMITS CLEANUP  
FOR CREW SLEEP

NOTES

ASCENDING NODE  
ORB: 53  
MET: 003:06:03:12  
LON: 75.0 E

ORIGINAL PAGE 13  
OF POOR QUALITY

UPLINK  
SPEC LOAD -  
1ST COMM  
ALERT  
CND  
RCOR SLEEP  
CONFIG

# STS-4 DETAILED

NET  
DAY 003

SQLS: STON

PLT

CDR

MCC

NOTES

07:00 07:10 07:20 07:30 07:40 07:50 08:00

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

T S C 151

ORB  
54

SLEEP

SLEEP

UPLINK  
ORBITER S.V.

ORIGINAL PAGE 19  
OF POOR QUALITY

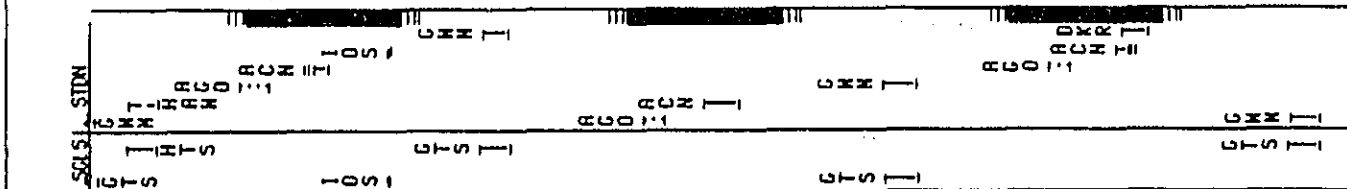
ASCENDING NODE  
ORB: 54  
MET: 003:07:33:39  
LON: 51.9 E

4-65

5/11/82 515471H

STS-4 DETAILED

HET 08:00  
DRY003



CDR

PLT

NOTES

MCC

ASCENDING NODE  
ORB: 55  
MET: 003:09:04:07  
LON: 28.7 E

ASCENDING NODE  
ORB: 56  
MET: 003:10:34:34  
LON: 5.6 E

ASCENDING NODE  
ORB: 57  
MET: 003:12:05:01  
LON: 17.5 W

SLEEP

SLEEP

# STS-4 DETAILED

MET 0600  
 DRY.003  
 13:00

(R1) B2  
 AUTO  
 VERN  
 RT 0.2  
 DB 0.1

SELSI SITM

ALGO 1.1

DRY 58

TO SUN

DRY 58

13:40

13:50

14:00

PLT

SLEEP

CDR

SLEEP

MCC

UPLINK  
 DRBITTER S.V.

NOTES

ORIGINAL RECORD  
 OF FOUR COPIES

ASCENDING NODE  
 ORB: 58  
 MET: 003:13:35:26  
 LGS: 40.6 M

4-67

5/14/82 STS/R/H

FLT DAY 5

STS-4 DETAILED

MET  
DRY003

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

SOLSL STIM

PLT

MCC

NOTES

ORIGINAL PAGE 11  
OF POOR QUALITY

SLEEP

SLEEP

# STS-4 DETAILED

MET 0800  
 DRY 003

NOTES

MCC

PLT

CDR

SCSI STDA

(S) 15:00  
 AUTO  
 VERI  
 RT 0.2  
 DS 0.1  
 ORB 59

POST SLEEP ACTIVITY  
 (ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
 (ORBIT OPS C/L, CREW SYS)

ASCENDING NODE  
 ORB: 59  
 MET: 003:15:05:55  
 LON: 63.8 N

- CMO
- RCOR RAKE
- CONETIC
- UPLINK
- SPC LOAD -
- CLEAR COMM
- ALERT
- LINEAR DSEM
- SN CKPT -
- READ/NOT READ
- UPDATE
- H2O SPLY DUMP
- QTY TK A & B
- TEP
- BLOCK DATA
- WEATHER PAD
- B-15/60-63

DM  
 KRAH  
 RDA  
 TX  
 I

ALL TO SUN

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

# STS-4 DETAILED

MET B C M  
DAY 003 1 5

CDR

PLT

NOTES

SOLAR STIM

EPICS THERMAL SINKBOX  
(PULSE MODE - FTO 412-07)  
(ORBIT OPS C/L, RCS FTO's)  
Perform Step 1 (CONFIGURE FOR  
TRANSLATION)

Changeout wireless  
headset battery pack

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

SUPPLY WATER DUMP  
(ORBIT OPS C/L, FTO's)  
Dump TKS A & B  
Dump to:  
QTY A = QTY B =  
FUEL CELL PURGE - RUD. (Due Card)

ORIGINAL PAGE 1  
OF POOR QUALITY

ASCENDING NODE  
ORB: 60  
MET: 003: 16:36:22  
LON: 86.9 N

MEAL

MEAL

IM  
OR  
KD  
I  
MAX

4-7C

5/14/82 51507 IN

# STS-4 DETAILED

MET 8:00  
DAY 003

SCS1 STIM

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

17:10

17:20

17:30

17:40

R1 (B2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

17:50

18:00

PLT

CDR

MEAL

MEAL

UPDATE  
OMS/ROS  
ICONNECT  
CONFIC

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, IIR P/RAID)

ICONNECT: I (R) OMS to ROS  
(ORBIT PKT C/L, RES)

AUTO MNR TO IIR ALIGN ATT  
MNR OPTION: R = 241.7  
P = 307.6  
Y = 353.1

DAP: A/AUTO/VERN  
(17:37) Initiate MNR

STAR TRACKER SELF-TEST  
(ORBIT OPS C/L, GNC)  
IIR ALIGNMENT - S TRK  
(ORBIT OPS C/L, GNC)  
STAR ID: -Y: 42, ALPHECCA  
-Z: 15, HADAR  
ANG DIF: 89.1

NOTES

MCC

ORIGINAL PHOTOCOPY  
OF POOR QUALITY

Stars 42 & 15  
available from  
3/17:30 to 3/18:10

TELETYPE UNIT

TRK ID:	1	2	3
ANG			
ΔX	( )	( )	( )
ΔY	( )	( )	( )
ΔZ	( )	( )	( )
EXECUTION TIME:			





# STS-4 DETAILED

NET B C M  
DAY003

NOTES

MCC

PLT

CDR

C3 DFI RCDRS PCM - HI SAMP  
(10 min after FRCS Burn)

19:00  
(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

CABIN TV ACT  
VTR

19:10

ERCS THERMAL SUBRACK  
(PULSE MODE - FTO 412-07)  
(ORBIT OPS C/L, RCS ETO-5)  
Perform Step 3 (PERFORM TRANSLATION)  
(19:20) -X TRANS (30 sec)

19:20  
(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

C3 JDFI RCDRS MB MSN - STBY (tb-bp)

19:30  
(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

C3 DFI RCDRS PCM - HI SAMP  
(10 min after FRCS Burn)

ASCENDING NODE  
ORB: 62  
MET: 003:19:37:16  
LON: 133.2 W

19:40

ERCS THERMAL SUBRACK  
(PULSE MODE - FTO 412-07)  
(ORBIT OPS C/L, RCS ETO-5)  
Perform Step 3 (PERFORM TRANSLATION)  
(19:50) -X TRANS (30 sec)

19:50  
(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

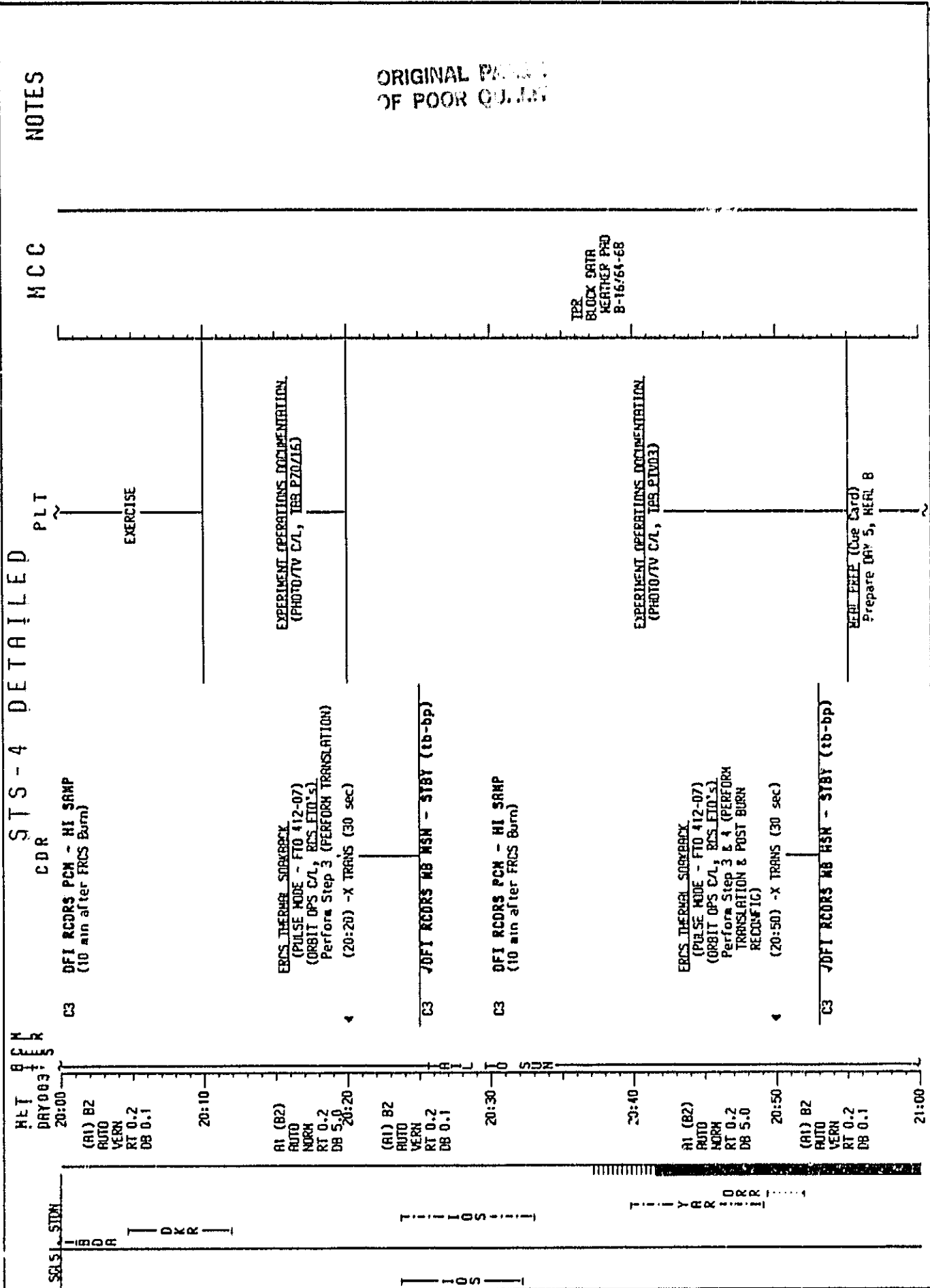
C3 JDFI RCDRS MB MSN - STBY (tb-bp)

20:00  
(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

EXERCIS

TV/ATR DEACT (TV/ATR/DEC Due Card)

# STS-4 DETAILED



ORIGINAL PAGE  
OF POOR QUALITY

TPR  
BLOCK DATA  
WEATHER PNO  
8-16/64-68

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, TBR PIV03)

REP REEF (Que Card)  
Prepare DRY S, NEAL B

# STS-4 DETAILED

HET  
DAY 003

CDR

C3 DF1 RCDRS PCM - HI SAMP  
(10 min after FDCS Burn)

NOTES

MCC

PLT

ASCENDING MODE

028: 63

HET: 003:21:07:46

LON: 156.4 W

WERL PREP

HOUSEKEEPING

VIR SETUP (TW06-HIS PULSE)  
(PHOTO/TV C/L, TV SENSES)

EXERCISE

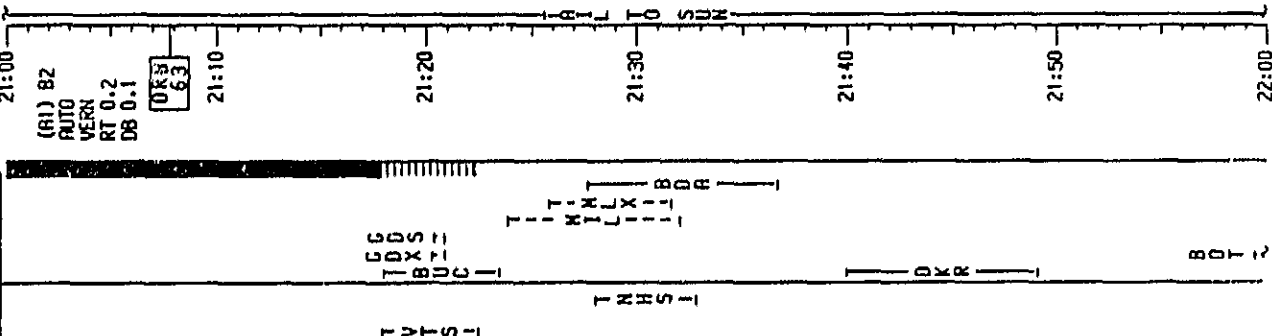
WERL

WERL

ORIGINAL WORK  
OF POOR QUALITY

4-75

5/11/82 STS/FIN



HET B C K R  
DAY 003

STS-4 DETAILED

NOTES

MCC

PLT

CDR

ORIGINAL PAGE 11  
OF POOR QUALITY

ASCENDING NODE  
ORB: 64  
MET: 003:22:38:13  
LON: 179.5 W

UPLINK  
ORBITER S.V.

VIR PLAYBACK (TV06-RCS PULSE)  
(PHOTO/TV C/L, TV SCENES)  
VIR at MIL  
(23:00-23:09)

HOUSEKEEPING

ME RL

ME RL

1-76

5/11/82 STS4/FIN

# STS-4 DETAILED

NET  
DRY003

CDR

PLT

NOTES

MCC

23:00 (R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

23:10

23:20 R16 (B2)  
AUTO  
VERN  
RT 0.2  
DB 0.1

23:30 (R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

23:40

23:50 R1 (B2)  
AUTO  
VERN  
RT 0.2  
DB 5.0

004  
00:00

BU  
UC  
T  
M  
L  
X  
B  
D  
R

NHS

HOUSEKEEPING

VTR PLAYBACK  
VTR at MIL

TV/VTR DEACT. (TV/VTR/ABC Cue Card)

PROCS. HIT HOLD TEST (ACH)  
(FTO 477-01)  
(ORBIT OPS C/L, CMC ETD's)

WENOTE  
TACAN DATA

TACAN TRACKING  
(FTO 479-01)  
(ORBIT OPS C/L, CMC ETD's)

C2 TO C8 TRANSITION

16MM CAMR SETUP (16MM/DB-AUTO MINVR)  
(PHOTO/TV C/L, 16MM SCENE'S)

TRACK TACAN SITE

ORIGINAL PAGE IS  
OF POOR QUALITY

# STS-4 DETAILED

CDR

PLT

NOTES

MCC

ASCENDING NODE

ORB: 65

MT: 004:00:08:43

GN: 157.3 E

ORIGINAL DATA  
OF POOR QUALITY

TACRN TRACKING

16MM COMP ACT (16MM/08-AUTO-MNR)  
(PHOTO/TV C/L, 16MM SCENES)

G8 TO G2 TRANSITION

AUTO MNR TO -XSL ATT (FTD 412-01)

MNR OPTION: R - 192

P - 278.9

Y - 336.8

DAP: B/AUTO/VERN

(00:12) Initiate MNR

16MM COMP DEACT (16MM/08-AUTO-MNR)  
(PHOTO/TV C/L, 16MM SCENES)

PRIVATE MEDICAL COMMUNICATION

PRIVATE MEDICAL COMMUNICATION

16MM COMP SETUP (16MM/10-FDS C/L)  
(PHOTO/TV C/L, 16MM SCENES)

POWER UP TACRNS (FTD 479-01)

TACRAN (three) MODE - T/R

(three) ANT SEL

CH 1 X

CH 2 X

CH 3 X

( : ) Channels are for

07

# STS-4 DETAILED

NET  
DAY 004  
01:00

CDR

PLT

NOTES

MCC

R2  
BPULSTERN VENT HTR ACT  
JBLR CHTLR PAR/HTR (three) - B  
CHTLR (three) - ON

ECS CHECKOUT  
(ORBIT OPS C/L, GNC)  
Step 1 - FCS & DED DISPLAY  
CONFIC

ECS CHECKOUT  
(ORBIT OPS C/L, GNC)  
Step 1 - FCS & DED DISPLAY  
CONFIC

ECS CHECKOUT  
(ORBIT OPS C/L, GNC)  
Step 2 - DPS CONFIC FOR FCS C/O

1694L CDR ACT (16944/10-ECS C/O)  
(PHOTO/TV C/L, 1694 SERIES)

ECS CHECKOUT  
(ORBIT OPS C/L, GNC)  
ON-ORBIT FCS CHECKOUT,  
PART 1 & 2

ECS CHECKOUT  
(ORBIT OPS C/L, GNC)  
ON-ORBIT FCS CHECKOUT,  
PART 1 & 2

ASCENDING NODE  
ORB: 66  
MET: 004:01:39:12  
LON: 134.1 E

UPLINK  
ORBITER S.V.





# STS-4 DETAILED

MET A C E R  
DAY 004  
03:00

CDR

AUTO MNR TO -YSL ATZ (FTO 412-01)

MNR OPTION: R \* 192

P \* 278.9

Y \* 336.8

DAP: B/AUTO/VERN

(03:02) Initiate MNR

PLT

SUPPLY WATER DUMP  
(ORBIT OPS C/L, ECLIS)  
Dump TKS A & B  
Dump to:

QTY A =

QTY B =

MCC

TPR  
BLOCK DATA  
WEATHER PRO  
B-17769-72

NOTES

ASCENDING NODE  
ORB: 67  
MET: 004:03:09:41  
LON: 111.0 E

ORIGINAL PAGE 17  
OF POOR QUALITY

SCLSI STON

(A1) 82

AUTO

VERN

RT 0.2

DB 0.1

ORB 67

03:10

03:20

03:30

03:40

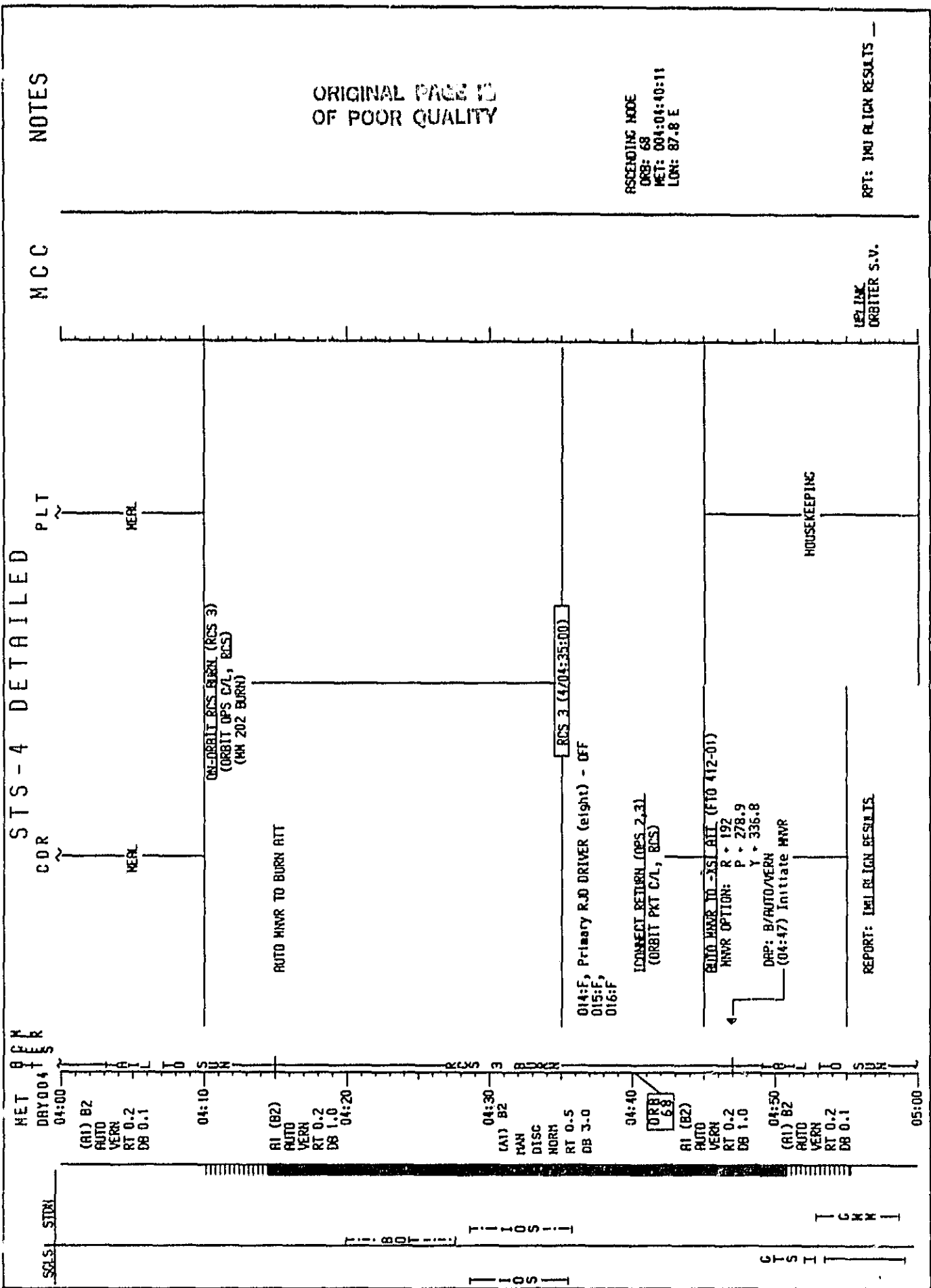
03:50

04:00

TAIL TO SUN

MEAL

MEAL



MET PER

DAY 004

SCSI STD

STS-4 DETAILED

PLT

MCC

NOTES

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

SINGLE IZ PDC OPS  
(ORBIT OPS C/L, DPS)

T H I S I

T H I S I

HOUSEKEEPING

DEL POWER UP (HWA)  
R11:H DF1 PCH CONT 1,2,3 SCSC (three) - ON

DEL POWER DOWN  
R11:H DF1 PCH CONT 1,2,3 SCSC (three) - OFF

EXPERIMENT OPERATIONS IDENTIFICATION  
(PHOTO/TV C/L, TBR P70/05)

EXPERIMENT OPERATIONS IDENTIFICATION  
(PHOTO/TV C/L, TBR P70/13)

VPC FREEZER TEMP READING  
(FTO 467-02)  
Record time, freezer temp,  
condenser temp (Cue Card)

CO2 RESORBER REPLACEMENT  
(7 into R)

ISSM DCRS SETUP (ISSM/D9-PLD CYCLE TEST)  
(PHOTO/TV C/L, ISSM STAGES)

C3 DFT RCDRS PCH - HI 3RRY  
(Last 10 Hrs of TRIL TO SUN)

EDEL CELL PURGE - RUM (Cue Card)

PBE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PBE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

Except: Leave DF1 RCDRS PCH - HI SAMP

PBE ONLY  
COORD C/L/EDR  
LIMITS CLEARUP  
FOR CREW SLEEP

ORIGINAL PAGE 17  
OF POOR QUALITY

100-450  
DET  
9-1-68  
K  
C

## NOTES

CC-0

119

COR

NET 05Y004  
9-11-66  
R.R. Cullen

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

ASCENDING NODE  
ORB: 69  
MET: 004:06:10:40  
LDN: 64.7 E

ORIGINAL. PAGE 15  
OF POOR QUALITY

UPLINK  
SPC LOAD -  
1ST COMH  
ALERT  
END  
RCDR SLEEP  
CONFIC

**PRE SLEEP ACTIVITY**

**PRE SLEEP ACTIVITY**

83475

**4325**

NY 100-281115

4

# STS-4 DETAILED

MET  
DAY 004  
07:00

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

SGLSI STON

CDR

PLT

NOTES

MCC

ORIGINAL RECORD  
OF POOR QUALITY

ASCENDING NODE  
DB: 70  
MET: 004:07:41:09  
LON: 41.5 E

SLEEP

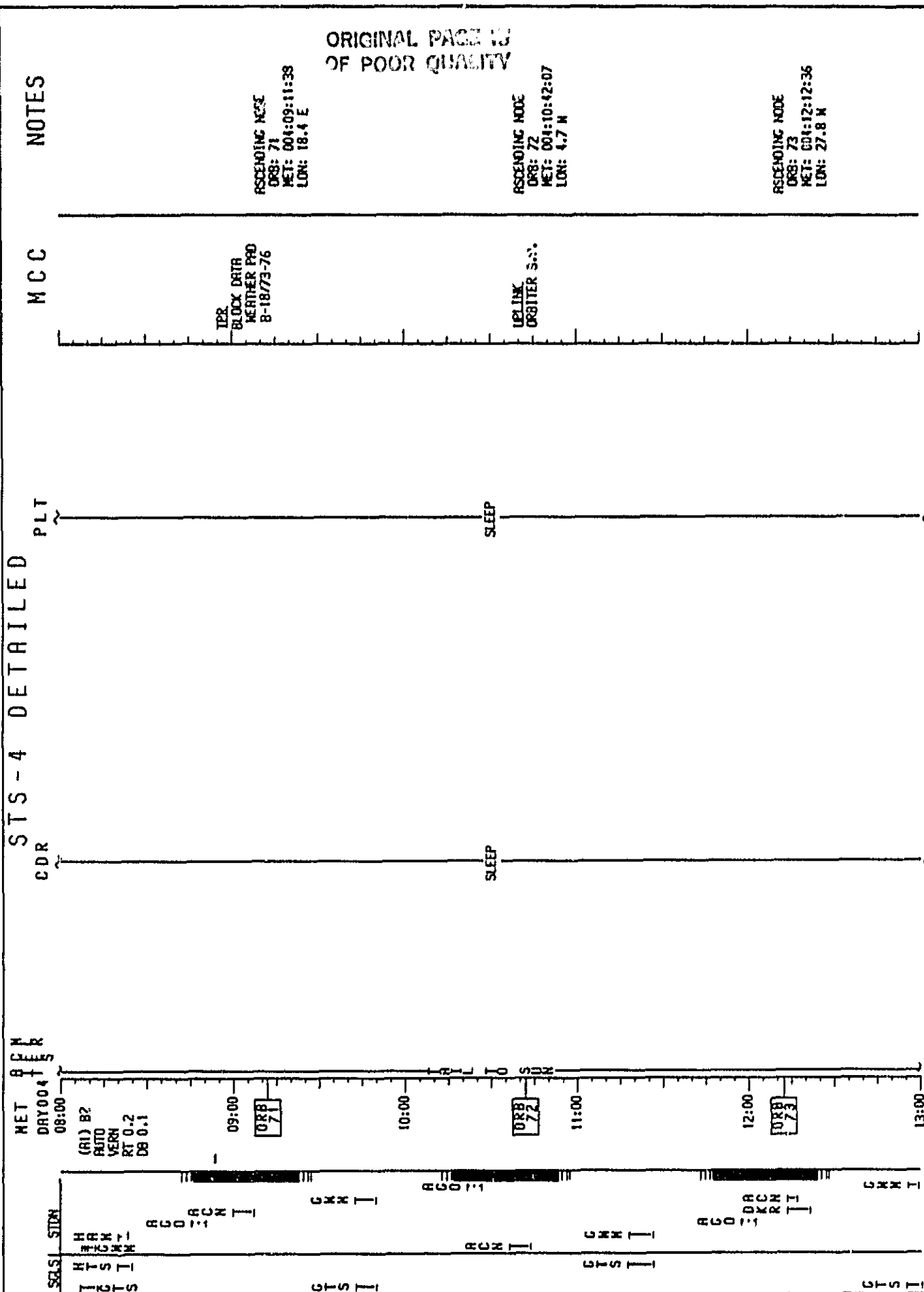
SLEEP

T S R R I

T I I O S I I

T I I O S I I

# STS-4 DETAILED



# STS-4 DETAILED

NOTES

MCC

PLT

CDR

MET  
DAY004  
13:00

SLSL STDN

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

13:10

13:20

13:30

13:40

13:50

14:00

DKR  
M  
RD  
I

ORIGINAL PAGE 11  
OF POOR QUALITY

ASCENDING NODE  
ORB: 74  
MET: 004:13:43:05  
LOM: 51.0 N

UPLINK  
ORBITER S.V.  
CNO  
RCOR EAPKE  
CONFIC  
UPLINK  
SPC LOFO -  
CLERE COMM  
ALERT

SLEEP

SLEEP

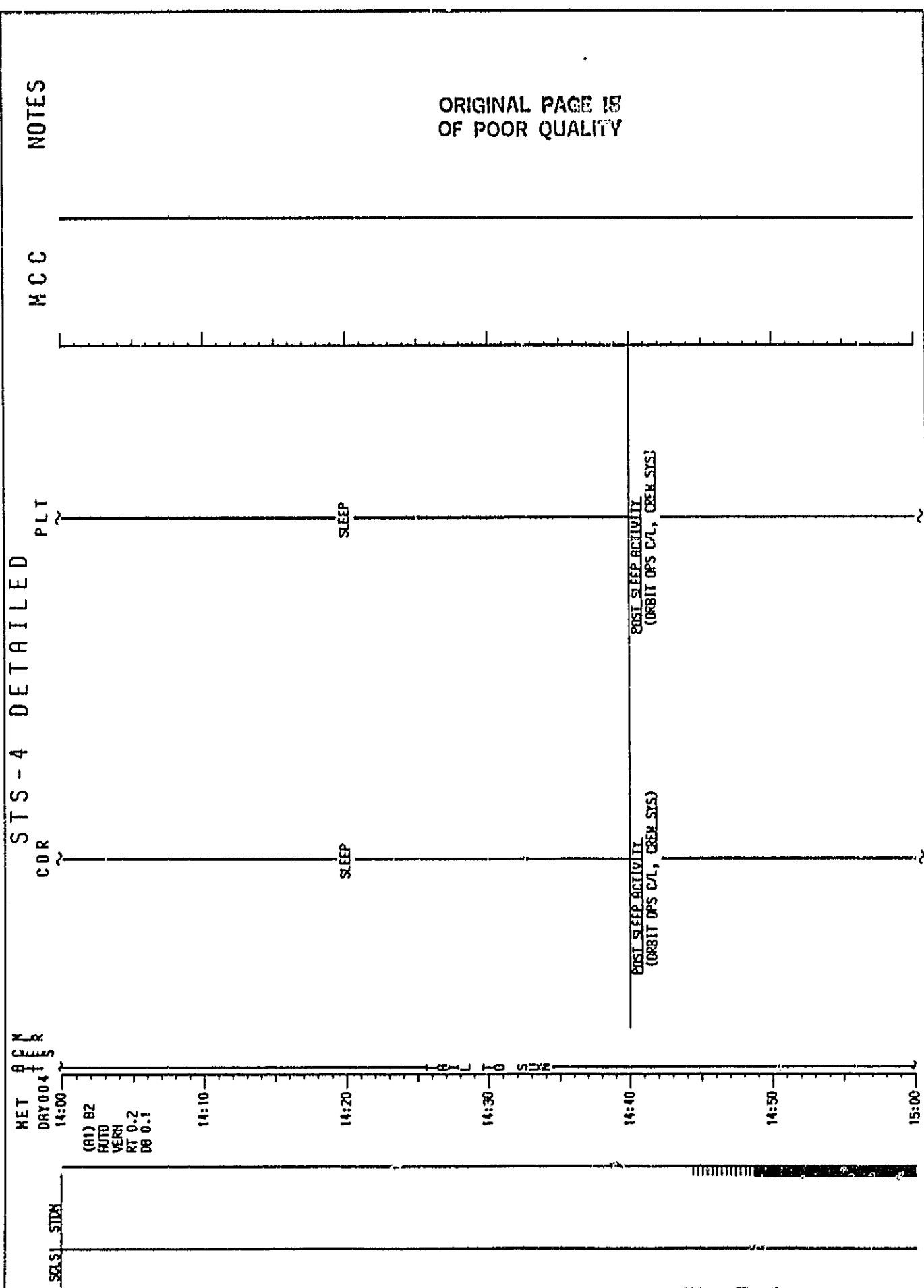
5/14/82 SIS/IN

1-87

FLT DAY 6



STS-4 DETAILED



ORIGINAL PAGE 18  
OF POOR QUALITY

5/14/82 SIS/IN

4-88

# STS-4 DETAILED

NET 0 CDR  
DAY 004

NOTES

MCC

PLT

CDR

SCSI STON

(R1) B2  
AUTO  
VERB  
RT 0.2  
DB 0.1

POST SLEEP ACTIVITY

POST SLEEP ACTIVITY

ASCENDING NODE  
ORB: 75  
MET: 004:15:13:34  
LON: 74.1 N

DM  
KA  
RD  
T  
M  
A  
X  
I

TPR  
BLOCK DATA  
WEATHER PRO  
8-19/77-80  
UNDECK CREW  
SN EXPT -  
REDD/NOT RECD

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

LENS THERMAL SENSITIVITY  
(ONE PRO ENGINE - FTO 412-05)  
(ORBIT OPS C/L, RCS LEID'S)  
Perform Step 1 (CONFIGURE FOR  
TRANSLATION)

FILE CELL PURGE - HHHH (Due Card)

L1 HI LOBO DUCT HTR - R  
(S88 THERMAL EVAP)  
(30 min prior to PES ENABLE  
for PLBD OPS)

MEAL

MEAL

ORIGINAL PAGE 13  
OF POOR QUALITY

# STS-4 DETAILED

NET  
DAY 004

SCSI STDH

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

YARR TINIT DRR 11

16:10

16:20

16:30

16:40

ORB  
76

16:50

17:00

MW  
LI  
XLB  
TTDR  
TTT

CDR

NEAL

PLT

NEAL

NOTES

MCC

ORIGINAL PAGE IS  
OF POOR QUALITY

ASCENDING NODE  
ORB: 76  
MET: 004:16:44:03  
LON: 97.3 W

PLBD PERFORMANCE  
(PLBD COLD CASE - FTO 451-03)  
(ORBIT OPS C/L, PLBD FTO's)  
Theodolite sightings  
during PLBD operations

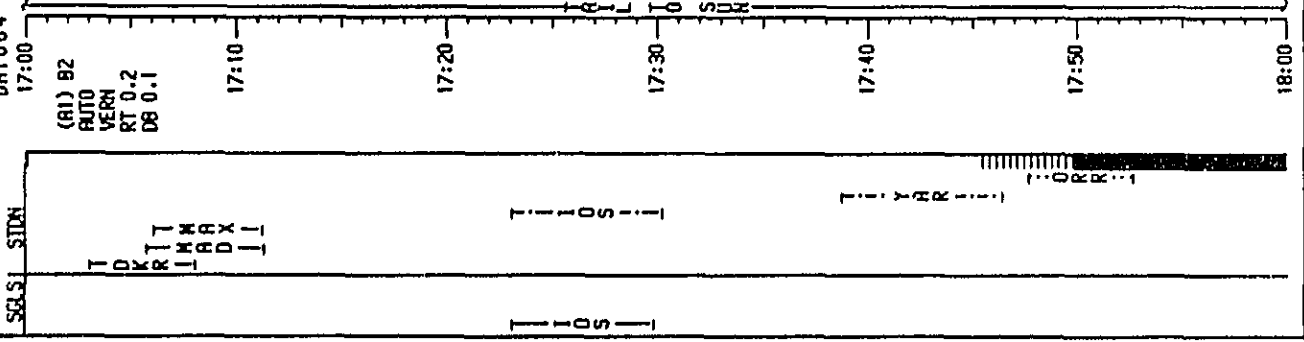
PLBD PERFORMANCE  
(PLBD COLD CASE - FTO 451-03)  
(ORBIT OPS C/L, PLBD FTO's)  
Theodolite sightings  
during PLBD operations

4-90

5711/82 STS4/FIN

# STS-4 DETAILED

NET  
DAY 004  
17:00



CDR

PLBD COLD CASE PERFORMANCE  
(FTD 451-03)

PLT

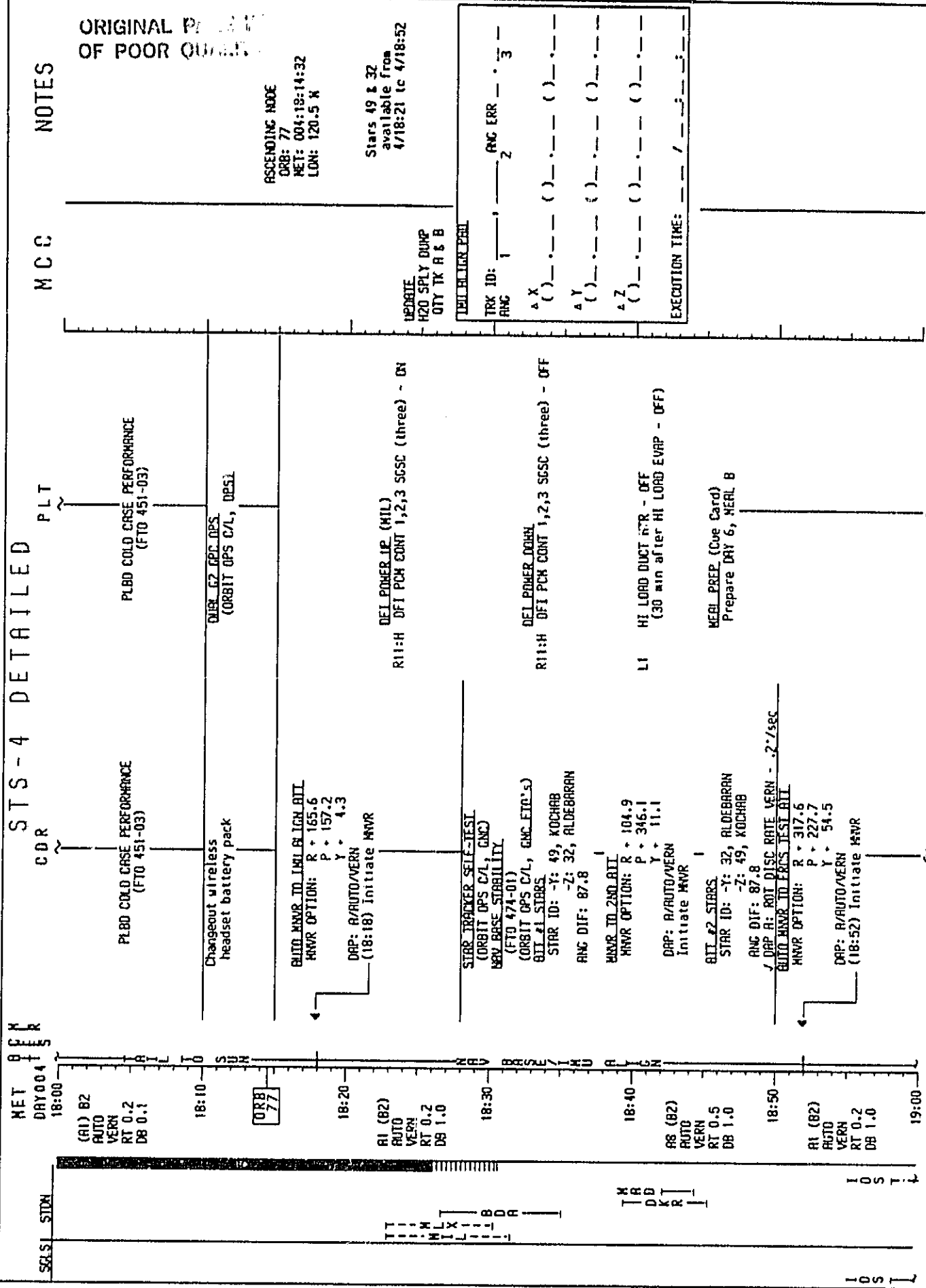
PLBD COLD CASE PERFORMANCE  
(FTC 451-03)

MCC

NOTES

ORIGINAL PAGE 18  
OF POOR QUALITY

# STS-4 DETAILED



# STS-4 DETAILED

NOTES

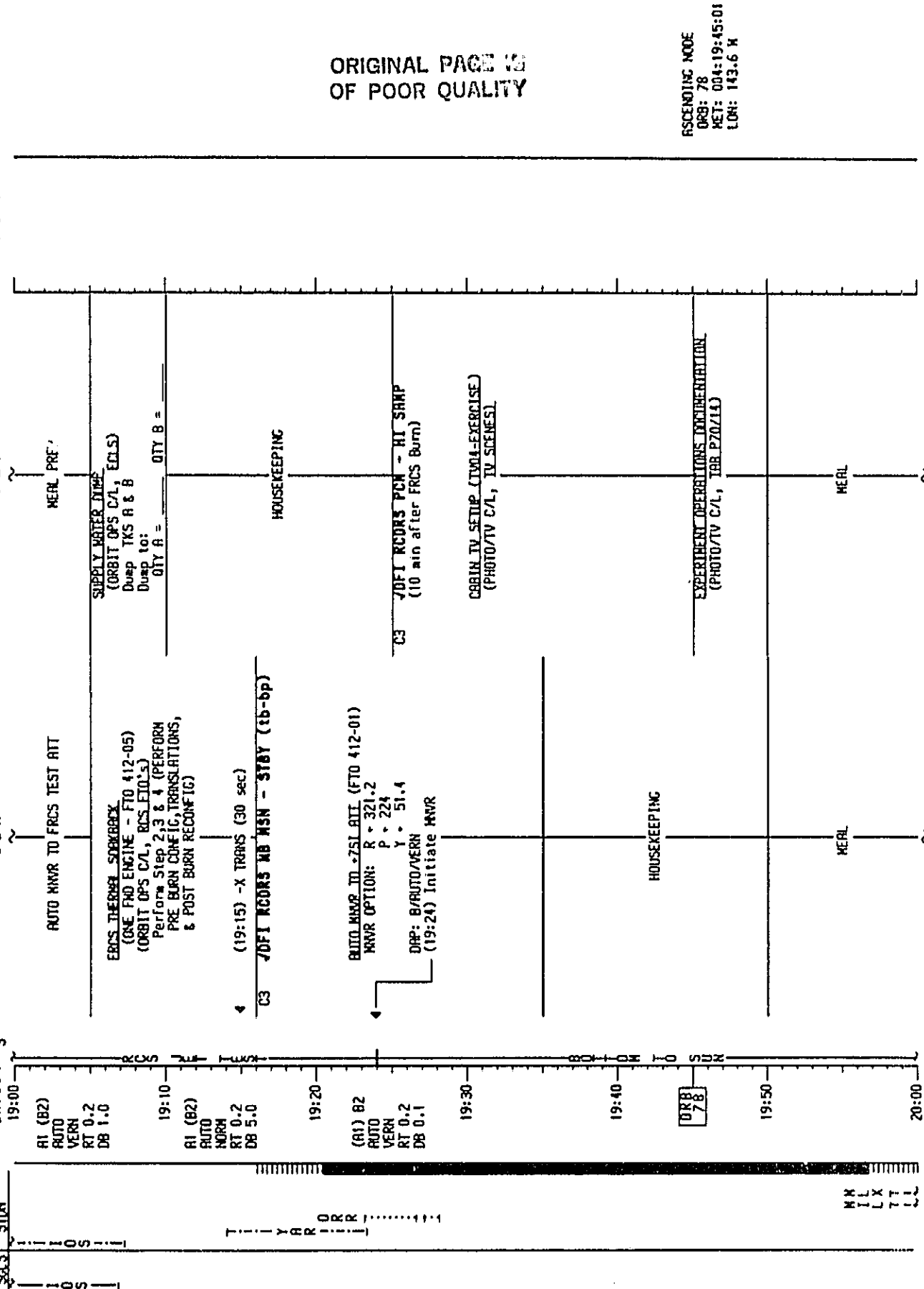
MCC

PLT

CDR

MET  
DAY 004

SCS STON



ORIGINAL PAGE 13  
OF POOR QUALITY

ASCENDING NODE  
ORB: 78  
MET: 004:19:45:01  
LOH: 143.6 M

# STS-4 DETAILED

NOTES

MCC

PLT

CDR

ORIGINAL PAGE 1  
OF POOR QUALITY

5/11/78Z STS471N

1-91

MET BURN  
DAY 004

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

20:10

20:20

20:30

20:40

20:50

21:00

A1 (B2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

AUTO MMR TO BURN ATT

ON ORBIT RCS BURN (RCS 4)  
(ORBIT OF 5 CAL, RCS)  
(MM 202 BURN)

HERL

HERL

SESL STN

T N H S I

ORR

WET  
DRY004

## NOTES

CCM

PLT

**CDR**

REF ID: A66004

**SCS 1**

A1 (B2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

MAN  
NORM  
RT 0.5  
DB 3.0

A1 (B2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

ASCENDING MODE  
CRS: 79  
NET: 004:21:15:30  
LON: 166.7 W

TPR  
BLOCK DATA  
WEATHER PRO  
B-20/81-84

014:F, Primary RJD DRIVER (eight) - OFF

INITIAL MNR TO POST BURN ATT  
(Use PAD ATT)  
DAP: R/AUTO/VERN  
Initiate MNR

SINGLE 62 CPC OPS  
(ORBIT OPS C/L, OPS)

AUTO MWVR IN 7SLATI (FTO 412-01)  
 MWVR OPTION: R 321.2  
                   P 224  
                   Y 51.4  
 DAP: 8/AUTO/VERN  
 (21:52) Initiate MWVR

## EXERCISE

ORIGINAL FROM  
OF POOR QUALITY



STS-4 DETAILED

CDR

PLT

NOTES

ORIGINAL PAGE  
OF POOR QUALITY

ASCENDING NODE  
DRG: 80  
MET: 004:22:45:59  
LON: 170.0 E

MCC

AUTO MNVR TO +ZSI ATT

CABIN TV REL (TOTAL-EXERCISE)  
(PHOTO/TV C/L, TV SCENES)  
Live at HRA

EXERCISE

PRIVATE MEDICAL COMMUNICATION

PRIVATE MEDICAL COMMUNICATION

AUTO MNVR TO IECD GAS RELEASE  
TGT ID + 2  
BODY VECTOR + 5  
P + 0  
Y + 270  
DN + 90  
DAP: A/AUTO/VERN  
(22:34) Initiate TRK

EXERCISE

IECD GAS RELEASE (FSO 5431-01)  
✓Attitude mnvr complete  
Change DAP A:  
ROT DISC RATE VERN - .007"/sec  
DB ATT VERN - 0.5"  
DAP: A/AUTO/VERN

4-96

5/14/82 STS/FIN

NET 13H  
SET 1004H  
NR 375

## NOTES

CCM

PLT

CDR

NET 13H  
SET 1004H  
NR 375

**WILLS 15715**

(A1) B2  
AUTO  
WEEX  
RT 0.2  
08 0.1

CNC UNIV PTG  
 BODY VECT + 2 (-X Axis)  
 (23:05) Initiate ROT  
 IECH - POS 1  
 Wait 30 sec  
 IECH - POS 2

**R11**      **R11**

**R11**      **R11**

## EXERCISE 1

IV/VIR DEACT (IV/VIR/NAC Cue Card)

ORIGINAL PAGE IS  
OF POOR QUALITY

**UPLINK  
ORBITER S.V.**

[GNC UNIV PTC]  
-(23:50) STOP - ITEM 21 (x)

Change DAP A:  
ROT DISC RATE VERN - 0.2°/sec  
DR ATT VERN - 10°

AUTO HWR m -ZSL ATT (FTO 412-01)

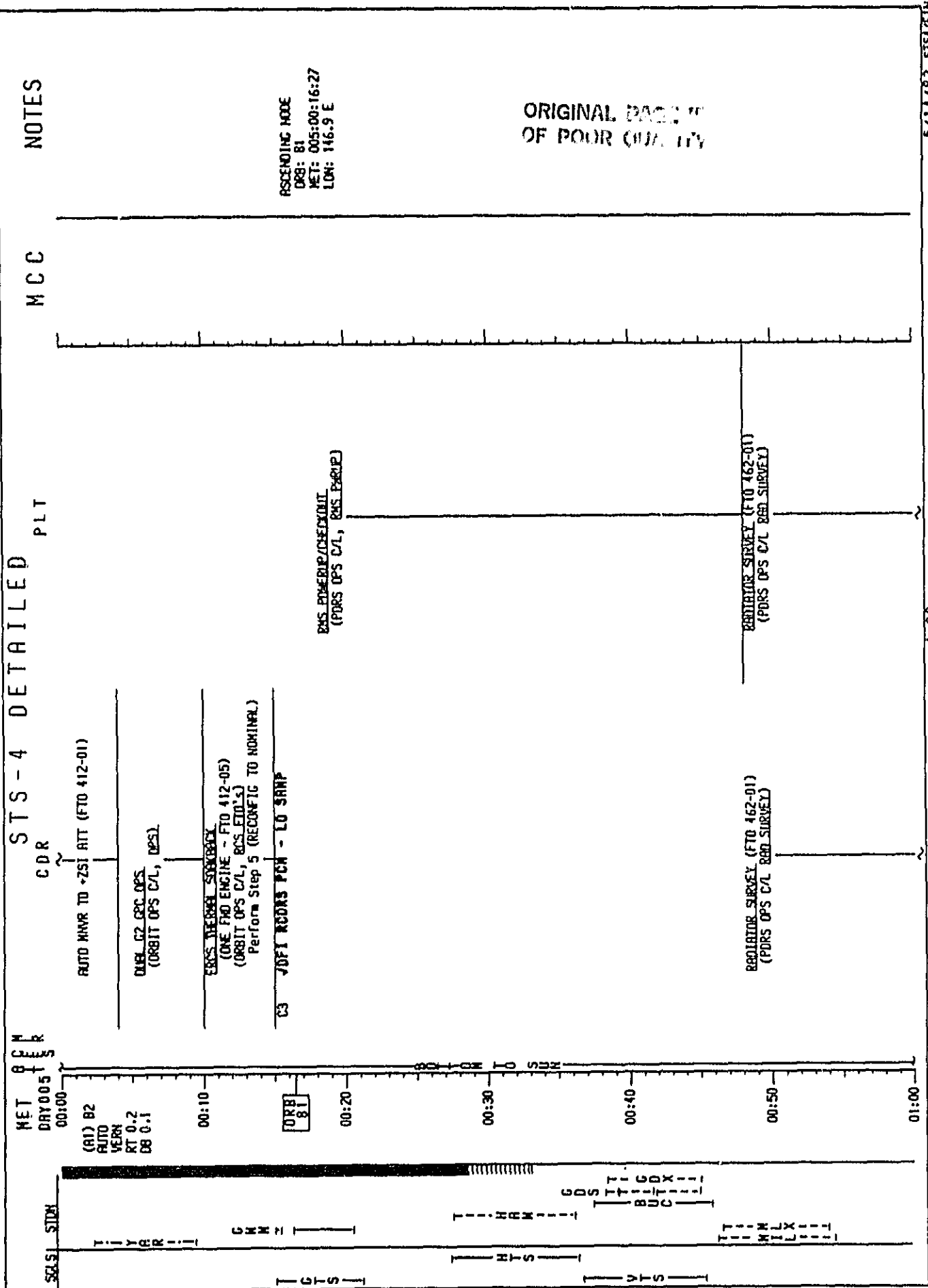
NRK OPTION: R = 321.2  
P = 224

Y - 51.4

DATE: 07/04/2014  
- (23:53) Initiate HVR

**Figure 2**

# STS-4 DETAILED



ASCENDING NODE  
 ORB: 81  
 MET: 005:00:16:27  
 LON: 116.9 E

ORIGINAL PAGE 1  
 OF FOUR QUALITY

# STS-4 DETAILED

MET DAY 005  
01:00

NOTES

MCC

PLT

CDR

RADIATOR SURVEY  
(FTO 462-01)

RADIATOR SURVEY  
(FTO 462-01)

ORIGINAL PHOTO  
OF POOR QUALITY

ASCENDING NODE  
ORB: B2  
MET: 005:01:46:56  
LON: 123.7 E

UNLOADED RMS/PRCS INTERSECTION  
(FTO 452-03)  
(PDMS OPS C/L, UNLOADED PRCS)  
(Perform during darkness)

UNLOADED RMS/PRCS INTERSECTION  
(FTO 452-03)  
(PDMS OPS C/L, UNLOADED PRCS)  
(Perform during darkness)

RE-ESTABLISH BOTTOM SUN AIT  
DAP: B/AUTO/VERN

MET  
DAY 005  
02:00

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

SEAS  
SUM

HTS

VIS  
GDS  
TTC  
8C1  
UCX  
T

ECN

T  
B  
T

# STS-4 DETAILED

CDR

PLT

SINGULARITY HANDLING - MENDEL  
(FTO 452-02)  
(PDOS OPS C/L, SINGULAR HANDLING)

SINGULARITY HANDLING - MENDEL  
(FTO 452-02)  
(PDOS OPS C/L, SINGULAR HANDLING)

MCC

TP2  
BLOCK DATA  
WEATHER PRO  
8-21/85-88  
UPLINK  
ORBITER S.V.

REAL PREP (One Card)  
Prepare DAY 6, MENL C

RMS PROGRAM  
(PDOS OPS C/L, RMS PROGRAM)

A7L  
On PDOS DPC (six) - OP  
(Post RMS Activities)

SINGLE C2 DPC OPS  
(ORBIT OPS C/L, DCS)

ORIGINAL PAGE 15  
OF POOR QUALITY

NOTES

MET  
 MAY 05  
 14  
 15  
 16

LEADLINE  
H2O SPLY DUMP  
QTY TK A & B

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, TBS PZD/15)

SUPPLY WATER DUMP  
(ORBIT OPS C/L; ECLS)  
Dump TKS A & B  
Dump to:

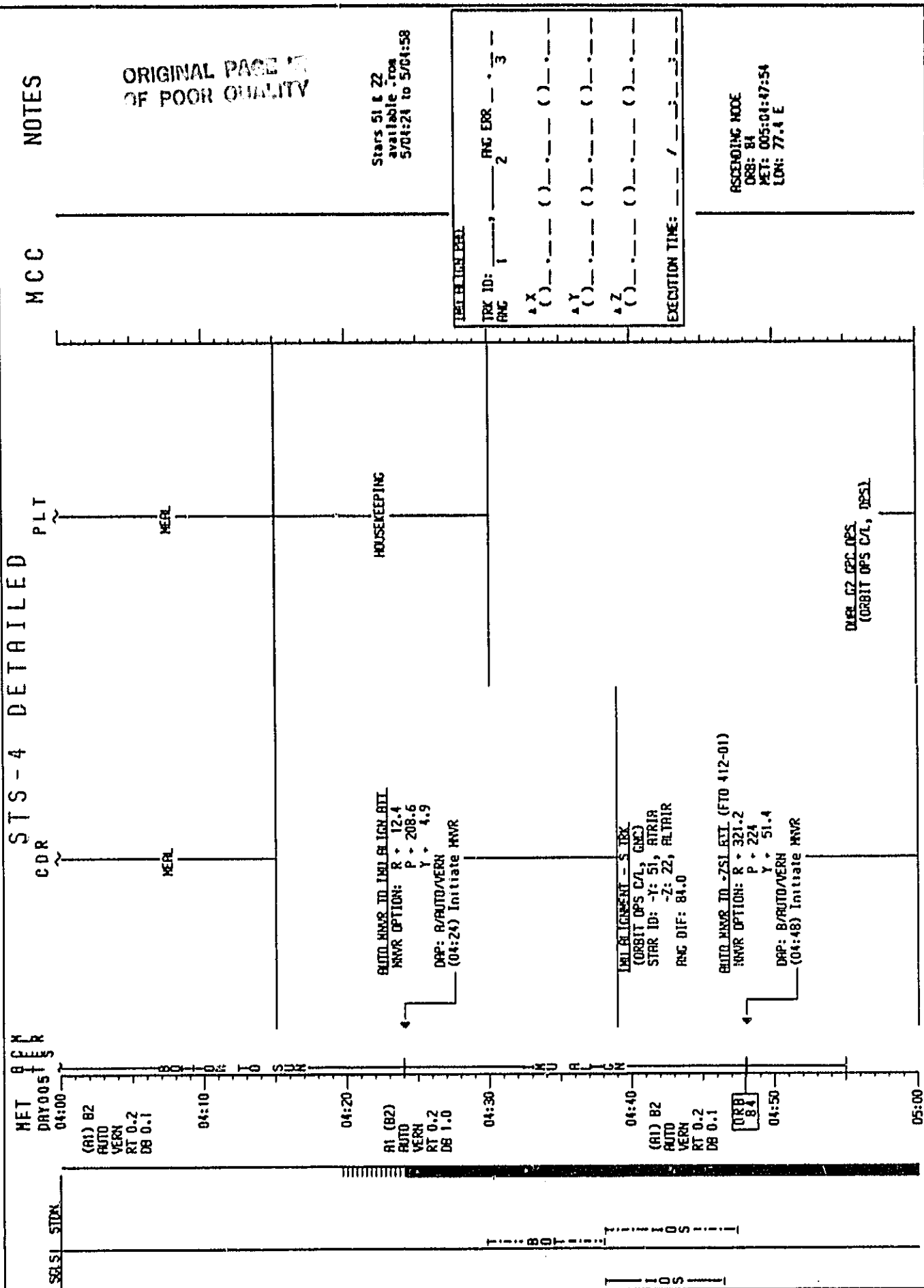
ASCENDING MODE  
DR8: 83  
MET: 005:03:17:25  
LON: 100.6 E

ORIGINAL, PAGE 7  
OF POOR QUALITY

4-101

MI 37515 28/11/5

# STS-4 DETAILED



ORIGINAL PAGE IS  
OF POOR QUALITY

NOTES

MCC

PLT

STS-4 DETAILED

CDR

RCS HOT FIRE TEST  
(ORBIT OPS C/L, RCS)

DIRECT RETURN OPS 2.3)  
(ORBIT PXT C/L, RCS)

RE-ESTABLISH BATTOM TO SUN ATT.  
DAP: B/AUTO/VERN

DEL POWER DOWN  
R11:H DEL PCN CONT 1,2,3 SCSC (three) - OFF

SINGLE G2 OPC OPS  
(ORBIT OPS C/L, DPS)

VPC FREEZER TEMP READING  
(FTO 467-02)  
Record time, freezer temp,  
condenser temp (Cue Card)

CO2 PRESSURE REPLACEMENT  
(B into B)

HOUSEKEEPING

DEL DEL PURGE - HUIA (Cue Card)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

NET B C M  
DAY 005 T S  
05:00  
RIS (B2)  
MAN  
NORM  
PULSE  
RT 0.2  
DB 5.0  
05:10  
RCS HOT FIRE TEST  
(ORBIT OPS C/L, RCS)  
05:20  
(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1  
05:30  
05:40  
05:50  
06:00

T S R A I

T C T S I

H T S

G M M T I I

T I I H A W I I I

I A S O I

SCLS STON

4-103

5/14/82 SIS/MIN

FD-101-1

5/14/82 STS/7H



# STS-4 DETAILED

MET  
DAY 005

06:00 06:10 06:20 06:30 06:40 06:50 07:00

(R1) B2  
AUTO  
VERN  
RT 0.2  
DS 0.1

06:20

PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

SLEEP

SLEEP

CDR

PLT

NOTES

MCC

MCC ONLY  
COORD CEN/FDA  
LIMITS CLEANUP  
FOR DREN SLEEP

HELINK  
SPEC LOFO -  
1ST CORR  
ALERT  
DREL  
RDR SLEEP  
CONFIG

ASCENDING NOTE  
DRE: 25  
MET: 335:06:18:22  
LON: 54.3 E

ORIGINAL PAGE 1  
OF POOR QUALITY

4-104

5/14/82 STS47FH

# STS-4 DETAILED

NET  
07:00  
07:10  
07:20  
07:30  
07:40  
07:50  
08:00

SCSI STDN

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

S R R

...R 60...

ACN T I

10 S T I I

10 S T I I

CDR

SLEEP

PLT

SLEEP

MCC

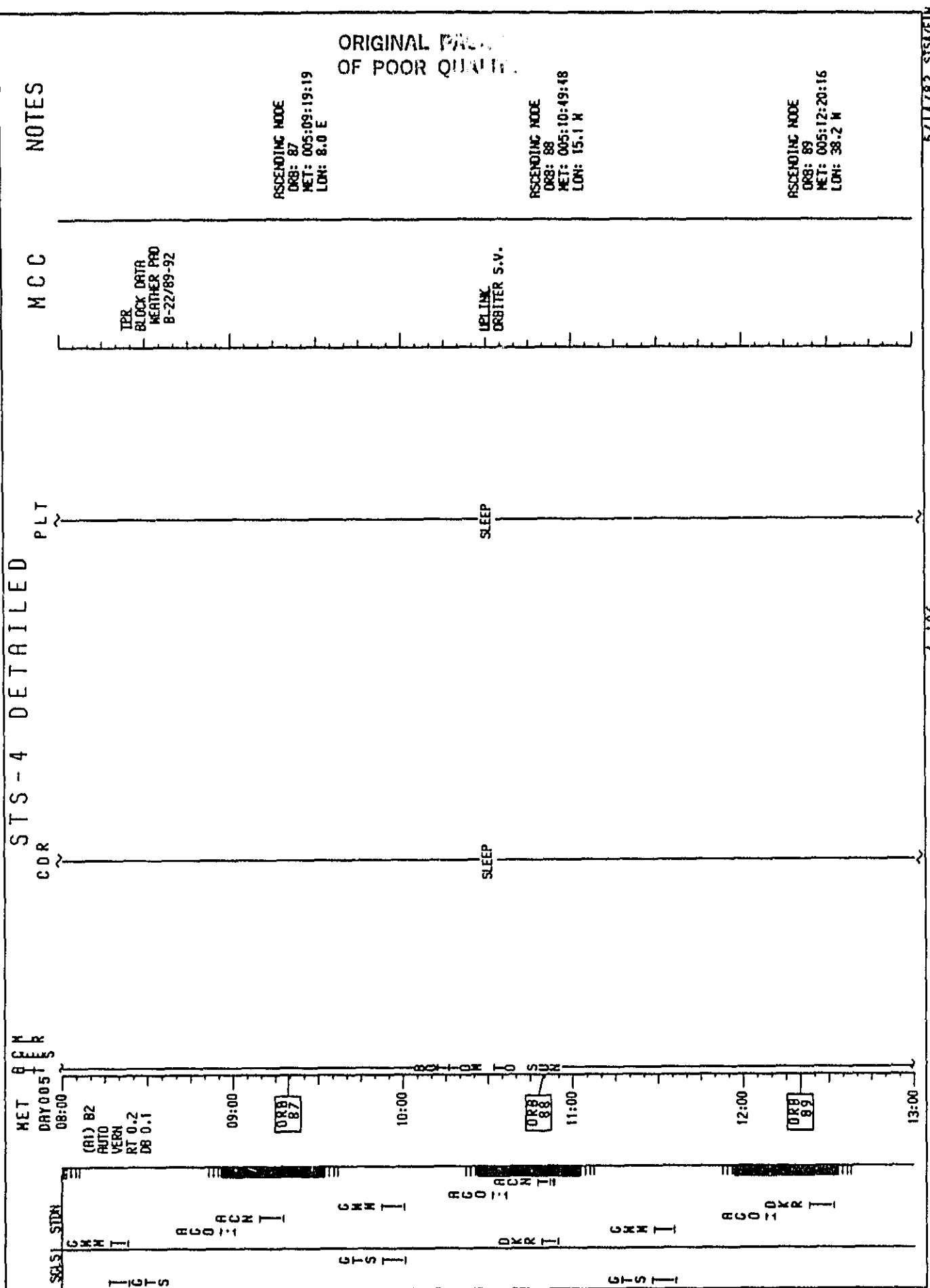
UPLINK  
DRBITTER S.V.

NOTES

ORIGINAL PAGE IS  
OF POOR QUALITY

RSCENDING NODE  
DRB: 86  
MET: 005:07:48:51  
LON: 31.1 E

# STS-4 DETAILED



ASCENDING NODE  
ORB: 90  
MET: 005:13:50:45  
LOW: 61.4 K

5/14/82 SYSA/FJN

101-1

FLT DAY 7

STS-4 DETAILED

HE 1  
DAY005

SGLSI STDN

**CDR**

**P L T**

## NOTES

CCM

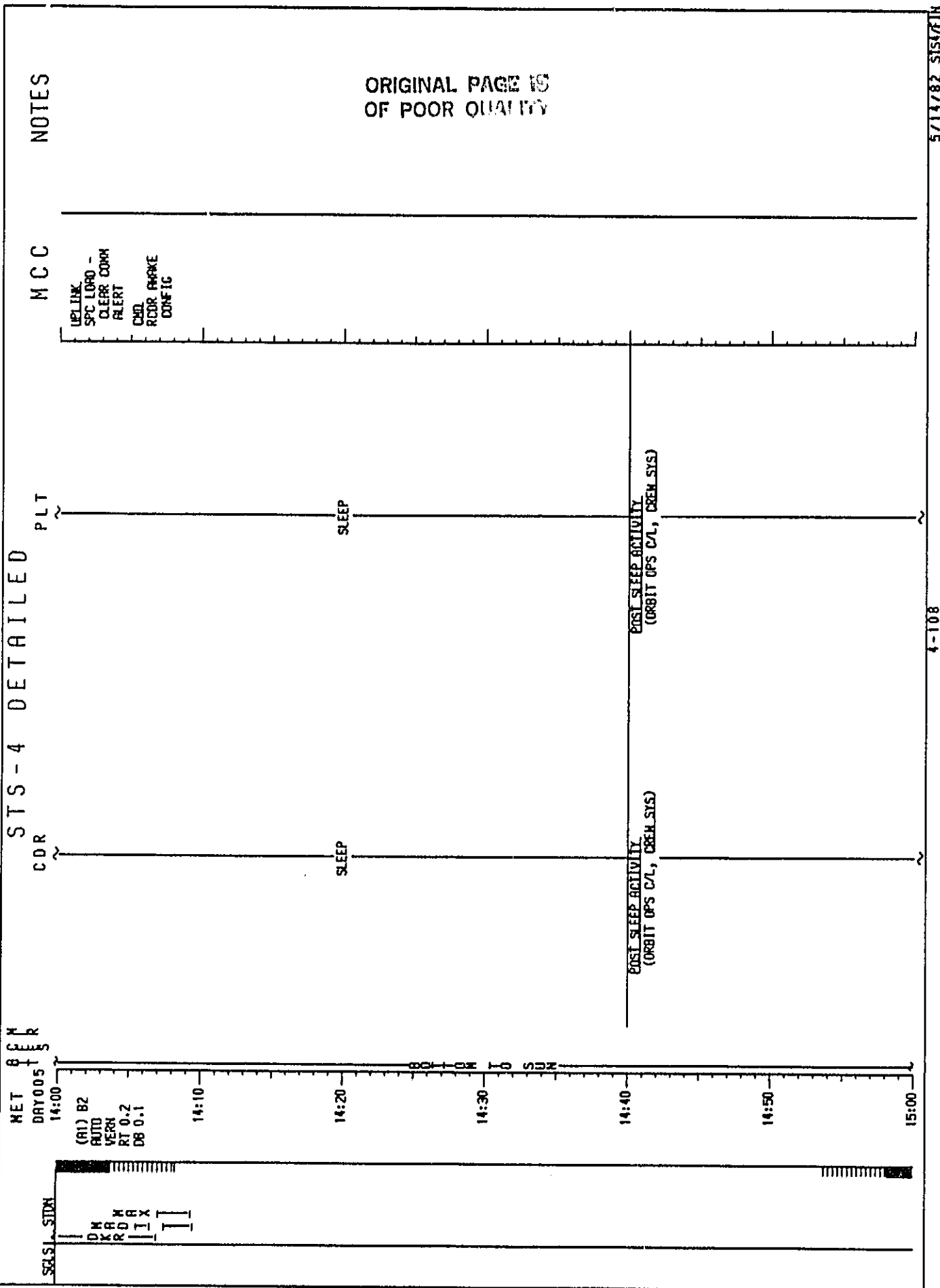
**دیتا**

**SLEEP**

(A1) 82  
AUTO  
VERN  
RT 0.2  
DB 0.1

0890

QXZ 1



HET  
 DAY005  
 8  
 3  
 4

MOLES 15.135

MCC NOTES

PLT

## NOTES

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/1 - CREW SYS)

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

PSD PERFORMANCE PREP ①  
CRYO 02 TX1, 2, 3, 4 HTRS (ALL) - OFF  
CRYO H2 TX1, 2, 3, 4 HTRS (ALL) - OFF  
until 02 PRESS = 700 PSIA  
or 02 PRESS = 180 PSIA  
or PSD PERFORMANCE on pg 4-113

Crew may reset SN alert limits to annunciate end of depressurization, if desired

PARAMETER NAME	S/W ID	SM ALERT LOW
CRYO O2 P TK1	0451100	700
H2 P TK1	0452100	180

ASCENDING NODE

OR8: 91  
MET: 005:15:21:13  
LOW: 84.5 W

ORIGINAL PAGE IS  
OF POOR QUALITY

UPLINK  
ORBITER S.V.  
TPR

**BLOCK DATA**  
**WEATHER PRO**  
**B-23/93-96**

INFORM CREW  
SM CKPT -  
REQD/LIMIT REQD

UPDATE  
H2O SPLY DUMP  
QTY TK A S B

TELEPRINTER MESSAGE REVIEW

THE/FP/PRINTER MESSAGE REVIEW

Changeout wireless headset battery pack

ERCS/ARCS THERMAL STACKBACK  
(2 END)/1 BET RCS ENC - FTO 413-06,08)

EUEL CELL PURGE - AUTO (Cue Card)	GAS DEACTIVATION FREE (Cue Card)
TRANSITION	(FSD 5435-01)

00001 G2 GPC OPS  
00001T OPS 07/01/01

PERSON PERFORMANCE REF ①

SUPPLY WATER TAMP  
(ORBIT OPS C/L, ECLS)  
Dump TKS A & B

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV CA. T88 P70/12)

QTY A = \_\_\_\_\_ QTY B = \_\_\_\_\_

4-1090

5/14/82 STS4/FIN

# STS-4 DETAILED

NET  
DAY 005

SCSI STON

NOTES

MCC

PLT

CDR

ACR

16:00  
RA (82)  
RUTO  
NORH  
RT 0.2  
DB 5.0

16:10

16:20

16:30

16:40

16:50

17:00

8010M TO SUN

MEAL

MEAL

TIME AIR TIR ..... 1

MW  
LI  
XL  
TI

ASCENDING NODE  
ORB: 92  
MET: 005:16:51:41  
LDN: 107.7 H

ORIGINAL PAGE IS  
OF POOR QUALITY

STS-4 DETAILED		PLT	NOTES
CDR			
ELBE/SMOKE DETECT/SUPPRESS TEST (ORBIT OPS C/L, EPS)		DEL POWER UP (BDA) R11:H DFI PCN CONT 1,2,3 SCSC (three) - ON	
ANNUNCIATOR, C/M LAMP TEST (ORBIT OPS C/L, EPS)		DEL POWER DOWN R11:H DFI PCN CONT 1,2,3 SCSC (three) - OFF	
			UPDATE OMS/RCS ICCONNECT CONFIG
		CABIN HEAT EXCHANGER/SUPPER FREE H2O INSPECTION	
		1. Open vent duct access door (outboard of cabin heat exchanger) and loosen lower vent cap clamp (3/8 in deep socket)	
		2. Remove vent cap and inspect for free water	
		3. No water - reinstall cap/secure Water observed - advise MCC	
		ICCONNECT: 1 (R) OMS to RCS (ORBIT PKT C/L, RCS)	
		CHANGE TRAP A: D8 ATT NORM - 3	
		AUTO HNR TO IMU A/ICM/BIU NEW ATT PL HNR OPTION: R - 252.9 P - 252.5 Y - 348.9 DAP: A/AUTO/NORM (17:57) Initiate HNR	

ORIGINAL PAGE IS  
OF POOR QUALITY



# STS-4 DETAILED

NET 8 CDR

CDR

PLT

NOTES

MCC

SOLSTON

DAY 005

18:00

AS (82)

AUTO

NORH

RT 0.2

D8 3.0

18:10

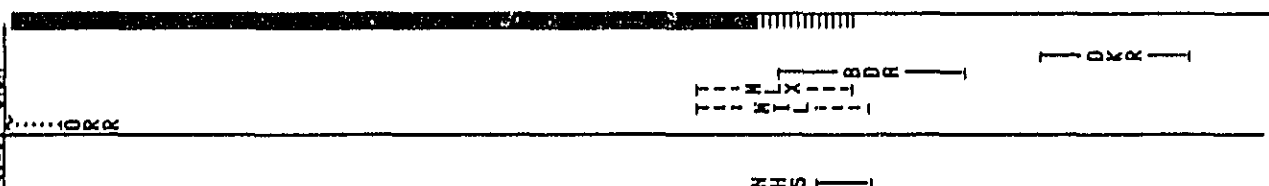
18:20

18:30

18:40

18:50

19:00



AUTO MNR TO IMU ALIGN/BU NAV ATT #1

STARS TRACKER SELF-TEST  
(ORBIT OPS C/L, GNC)  
IMU ALIGNMENT - S TRK  
(ORBIT OPS C/L, GNC)  
STAR ID: -Y: 41, DENEBOA  
-Z: 34, HIPHACIOUS  
RNC DIF: 88.6

BACKUP ORBITAL NAV TEST (FTO 476-01)  
[GNC 22 S TRK/DRBS CNT]  
S TRK -Y, -Z: TERM IDLE - ITEM 9, 10 (e)  
SHUTTER MAN OP - ITEM 15, 16 (e)

AUTO MNR TO ALL NAV ATT #2  
MNR OPTION: R \* 246.8  
P \* 288.6  
Y \* 351

DAP: R/AUTO/NORH  
(18:22) Initiate MNR (After Star  
STAR ID: -Y: 20, ARCTURUS 41 LOS)  
-Z: 17, ARCTUX

After Star 20 & 17 LOS  
[GNC 22 S TRK/DRBS CNT]  
SHUTTER MAN OP - ITEM 15, 16 (no n)  
S TRK -Y, -Z: STAR TRK - ITEM 3, 4 (e)

AUTO MNR TO -Y: 41 (FTO 412-01)  
MNR OPTION: R \* 321.2  
P \* 224  
Y \* 51.4

DAP: R/AUTO/NORH  
(18:35) Initiate MNR

TRX ID:	1	2	3
RNC			
A X	( )	( )	( )
A Y	( )	( )	( )
A Z	( )	( )	( )

EXECUTION TIME: -- / -- / --

EXERCISE

ASCENDING MODE  
DSB: 93  
MET: 005:18:22:09  
LON: 130.8 M

Stars 41 & 34  
available from  
5/17:32 to 5/18:19

Star 41 available  
until 5/18:21

Star 17 available  
until 5/18:26

Star 20 available  
until 5/18:33

ORIGINAL PAGE IS  
OF POOR QUALITY



# STS-4 DETAILED

COR

PLT

NOTES

MCC

ORIGINAL PAGE 13  
OF POOR QUALITY

NET  
DAY 005

20:00

R4 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

RLter Star 20.8 17.105  
[CNC 22.5 TRK/CORR ENL]  
SHOOTER MEN OP - ITEM 15, 16 (no x)  
S TRK -Y, -Z: STAR TRK - ITEM 3, 4 (x)  
CHANGE DDP A: DB ATT NORM -5.0 DB  
BLIND MNR IN -751 ATT (FTO 412-01)  
MNR OPTION: R = 321.2  
P = 224  
Y = 51.4  
DAP: R/AUTO/NORM  
(20:07) Initiate MNR

REG PREP (Due Card)  
Prepare DAY 7, MEAL B

TPR  
BLACK DATA  
WEATHER PRO  
B-21/97-100  
LELINK  
ORBITTER S.V.

PRSD PERFORMANCE

HOUSEKEEPING

HOUSEKEEPING

HOUSEKEEPING

HOUSEKEEPING

HOUSEKEEPING

HOUSEKEEPING

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HOUSEKEEPING

4-114

5/11/782 515476IN

# STS-4 DETAILED

NET  
DAY005  
21:00

SQLS  
STDA

CDR

PLT

MCC

NOTES

R4 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

ORB  
95

ASCENDING NODE  
ORB: 95  
MET: 005:21:23:06  
LON: 177.1 W

NEAL

NEAL

ORIGINAL FILED  
OF POON GUN

# STS-4 DETAILED PLT

NET  
DRY005  
22:00

R4 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

22:10

P5 (B2)  
MAN  
NORM  
DISC  
RT 1.0  
DB 5.0

R4 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

22:40

22:50

23:00

CONNECT: J (R) DMS to RCS  
(ORBIT PKT C/L, RCS)

PRESD PERFORMANCE  
(15% LEVEL - FTO 445-03)  
(ORBIT OPS C/L, EPS ETD)  
Perform Steps 2 and 3  
(PERFORM MVR & POWERDOWN)

NOTE: Do not config for  
VERN DRP

AUTO MVR TO BURN ALTITUDE  
MVR OPTION R- 315.3  
P- 226.9  
Y- 53.2  
DRP: R/AUTO/NORM  
(22:32) Initiate MVR

PERFORMS THERMAL SINKBACK  
(2 FND/1 AFT RCS ENG - FTO 412-06,08)  
(ORBIT OPS C/L, RCS ETD's)  
Perform Step 2 (PERFORM TRANSLATIONS)  
(22:46) -X TRANS (30 sec)  
-X TRANS (30 sec)

C3 JDFI RCORS MB HSN - STBY (16-bp)  
CONNECT RETURN (OPS 2.3)  
(ORBIT PKT C/L, RCS)

C3 JDFI RCORS PCN - NY SAMP  
(10 min after FRCG/ARCOS Test)

NOTES

MCC

ORIGINAL PAGE 10  
OF POOR QUALITY

UPDATE  
DMS/RCS  
CONNECT  
CONFIG

POST PRSD PERFORMANCE ①  
CRYO 02 TX1 & 2 HTRS A (two) - AUTO  
02 TX1 & 2 HTRS A,B (four) - AUTO  
02, H2 TX3 HTRS A (two) - AUTO  
02, H2 TX4 H.35 A (two) - OFF

If crew sets SA alert limits to  
annunciate end of depressurization

PARAMETER NAME	SA ID	SA ALERT LOW
CRYO 02 TX P TX1	0451100	575
H2 TX P TX1	0452100	165

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, TER P28/17)

ASCENDING NODE  
ORB: 96  
MET: 005:22:53:34  
LON: 159.7 E

# STS-4 DETAILED

NOTES

MCC

PLT

CDR

MET B C M  
DAY 005

ELIOT MNR IN - 751.811 (FTD 412-01)  
MNR OPTION: R - 321.2  
P - 224  
Y - 51.4  
DAP: R/AUTO/NORH  
(23:02) Initiate MNR

R4 (B2)  
AUTO  
NORH  
RT 0.2  
DB 5.0

PRIVATE MEDICAL COMMUNICATION

PRIVATE MEDICAL COMMUNICATION

ORIGINAL PAGE 10  
OF POOR QUALITY

STS-4 DETAILED

NET 1TH  
DAY006  
SMITH  
KLR

**CDR**

**PLT**

## NOTES

**GAS DEACTIVATION (Coe Card)**  
**(FSO S435-01)**

**ASTON GAS ENGINEER (Cue Card)**

AT LOAD DUCT HTR - A  
(S88 THERMAL EVAP)  
(30 min prior to FES  
for PL80 OPS)

DEFI POWER UP (CWM)  
R11:H DEFI PCH CONT 1,2,3 SCSC (three) - ON

```

DFI_POWER_DOWN
R11:H DFI_PCH_CONF_1,2,3 SCSC (three) - OFF

```

03 04/05 B 03

**HEAL PREP (Cue Card)**  
**Prepare DAY 7, HEAL C**

PLBD PERFORMANCE  
(THERMAL GRADIENT - FTO 451-04)  
(ORBIT OPS C/L, PLBD FTO's)  
Theodolite sightings  
during PLBD operations

**PLBD PERFORMANCE**  
(THERMAL GRADIENT - FTO 451-04)  
(ORBIT OPS C/L, PLBD FTM's)  
Theodolite sightings  
during PLBD operations

ASCENDING MODE  
ORB: 97  
MET: 006:00:24:04  
LON: 136.6 E

ORIGINAL PAGE IS  
OF POOR QUALITY

INFORM CRM  
FD 8 CO/NO CO

811-2

MIJYSL 28/11/5

# STS-4 DETAILED

MET  
DAY 006  
01:00

SELS  
STON

A4 (B2)  
AUTO  
NORA  
RT 0.2  
DB 5.0

01:10

01:20

01:30

01:40

01:50

01:58

02:00

ACN I I

T: BOT I I I

CHN

PLT

CDR

MCC

NOTES

UPLINK  
ORBITER S.V.

PLBD THERMAL GRADIENT (ORBITER TOP TO  
BOTTOM) PERFORMANCE (FTO 451-04)

PLBD THERMAL GRADIENT (ORBITER TOP TO  
BOTTOM) PERFORMANCE (FTO 451-04)

ORIGINAL PAGE 19  
OF POOR QUALITY

ASCENDING NODE  
DB: 98  
MET: 006:01:54:32  
LUN: 113.5 E



MET  
RAY006  
R4 (B2)  
AUTO  
NORR  
RT 0.2  
DB 5.0

SQ.51  
STON

# STS-4 DETAILED

CDR

PLT

MCC

NOTES

PLBD THERMAL GRADIENT (ORBITER TOP TO  
BOTTOM) PERFORMANCE (FTO 451-04)

PLBD THERMAL GRADIENT (ORBITER TOP TO  
BOTTOM) PERFORMANCE (FTO 451-04)

SUPPLY WATER TIME  
(ORBIT OPS C/L, ENLS)  
Dump TKS A & B  
Dump to:  
QTY A = QTY B =

TER  
BLOCK DATA  
WEATHER PRO  
B-25/101-104  
UPDATE  
H2O SPLY DUMP  
QTY TK A & B

ORIGINAL PAGE 15  
OF POOR QUALITY

NERL

NERL

# STS-4 DETAILED

MET  
03:00  
03:10  
03:20  
03:30  
03:40  
03:50  
04:00

SCSL STDN

DRY006

CDR

PLT

NOTES

MCC

R4 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

WERL

WERL

LI HI L980 DUCT HTR - OFF  
(30 min after HI L980 EVAP - OFF)

CREW STOW  
(ORBIT OPS C/L, CREW SYS)

CREW STOW  
(ORBIT OPS C/L, CREW SYS)

ORB  
99

ASCENDING NODE  
ORB: 99  
MET: 006:03:25:00  
LON: 90.3 E

ORIGINAL PAGE 12  
OF POOR QUALITY

NET 13H  
DAY006  
1  
CUTS  
MR

MOLES 15735

DOXHD

**CDR**

**P-I**

22

## NOTES

A4 (B2)  
AUTO  
NORM  
RT 0.2  
D8 5.0

04:10

02:50

04:30  
A1 (B1)  
AUTO  
VERN  
RT 0.2  
DB 1.0

04:40

4:50

08

00:00

# MOIS NIBBO

**CABIN STOW**

RCSS/RCSS THEOREM SOURCE  
(2 FWD/1 AFT RCS ENG - FTO 412-06.08)  
(ORBIT OPS C/L, RCS FTO's)  
Performa Step 3 (RECONFIG TO NOMINAL)

REFERENCE DAP R: D8 ATT VERN - 1\* D8  
 AUTO MVR TO JMU PLGN ATT  
 MVR OPTION: R \* 261  
                   P \* 349.6  
                   Y \* 39  
 DAP: R/AUTO/VERN  
 (04:32) Initiate MVR

MAL ALIGNMENT - S TRK  
 (ORBIT OPS C/L, QNC)  
 STAR ID: -Y: 43, RASALHAGUE  
 -Z: 28, AL NA'IR  
 ANG DIF: 85.0

4. DE/SEC.PTC.XPDR - INITIATE  
FTO 412-01)  
MMWR OPTION: R\* 8.6  
P\* 226.8  
Y\* 53  
DAP: A/AUTO/VERN  
(04:52) Initiate MMWR

HYD THERMAL COMBUSTIONING TERMINATE  
(ORBIT OPS C/L, BRU/HYD)

PAYLOAD DEACTIVATION  
(OPERATIONS C/L, TABLE)

POST OPERATIONS DOCUMENTATION  
(OPERATIONS C/L, TAB P70/14 & P70/15)

ORIGINAL PAGE IS  
OF POOR QUALITY

Stars 43 & 28  
available from  
6/04:34 to 6/05:13

**第 11 章 数据库系统**

TRX ID: 1, 2 ANG ERR 3

4X1

7 Y

11-11-11

( ) \_ . \_ ( ) \_ . \_ ( )

## EXECUTION TIME:

ASCENDING NODE

008: 100  
001: 820  
NET: 006:04:55:78

LOW: 67.2 E

4-123

51782 STS/TN

# STS-4 DETAILED

NET B C H  
DAY 006 T E R

NOTES

MCC

PLT

CDR

When MNVR to PTC ATT complete,  
CHANGE DDP R:

ROT DISC RATE VERN - 0.4 "/SEC  
BODY VECT .4

Initiate ROT

MSL DEACTIVATION (Cue Card)

(FSO 5441-01)

POST OPERATIONS DOCUMENTATION

ORBIT DEORBIT PREPARATION  
(OPERATIONS C/L, TABLE)

S-BAND ANTENNA PATTERN  
(FTO 471-01)  
(ORBIT OPS C/L, CREW ETD)

Configure for NAV  
AOS: 6/05:26  
LOS: 6/05:34

DELINK  
ORBITER S.V.

CABIN TV STON  
MF57E/ Stow both cameras  
MF57G

CD2 ABSORBER REPLACEMENT  
(9 into A)

SINGLE G2 EPS OPS  
(ORBIT OPS C/L, OPS)

FILE CELL PURGE - AUTO (Cue Card)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

ORBITER S.V.  
OF POOR QUALITY

# STS-4 DETAILED

MET OFFER  
DAY 006

NOTES

MCC

PLT

CDR

T R2 (B1)  
S AUTO  
A VERN  
R RT 0.4  
D8 1.0

ASCENDING MODE  
ORB: 101  
MET: 006:06:25:56  
LOW: 44.0 E

ORIGINAL PAGE 10  
OF POOR QUALITY

MCC ONLY  
COORD CDR/FDR  
LIMITS DLEAMP  
FOR CREW SLEEP

DELINK  
SPC LOAD -  
1ST COMM  
ALERT  
CMD  
RCOR SLEEP  
CONFIC

PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

SLEEP

SLEEP

4-124

5/14/82 STS/761R

# STS-4 DETAILED

MET PCM  
DRY006

07:00  
R2 (81)  
AUTO  
VERN  
RT 0.4  
DS 1.0

SCSL STIM

THS

THS

THS

THS

PLT

SLEEP

MCC

NOTES

ORIGINAL PARTIAL  
OF POOR QUALITY

ASCENDING NODE  
ORB: 102  
MET: 006:07:56:24  
LON: 20.9 E

4-125

5/14/82 STS/IN

# STS-4 DETAILED

CDR

PLT

NOTES

MCC

ORIGINAL PAGE 10  
OF POOR QUALITY

ASCENDING NODE  
ORB: 103  
MET: 006:09:26:52  
LON: 2.2 N

ASCENDING NODE  
ORB: 104  
MET: 006:10:57:20  
LON: 25.3 N

ASCENDING NODE  
ORB: 105  
MET: 006:12:27:48  
LON: 48.5 N

TER  
BLOCK DATA  
HEATHER PRO  
8-26/105-108

UPLINK  
ORBITER S.V.

SLEEP

SLEEP

08:00  
R2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

09:00  
ORB 103

10:00  
ORB 104

11:00  
ORB 105

12:00

13:00

STS I

CMH I

AGD I

STS I

CMH I

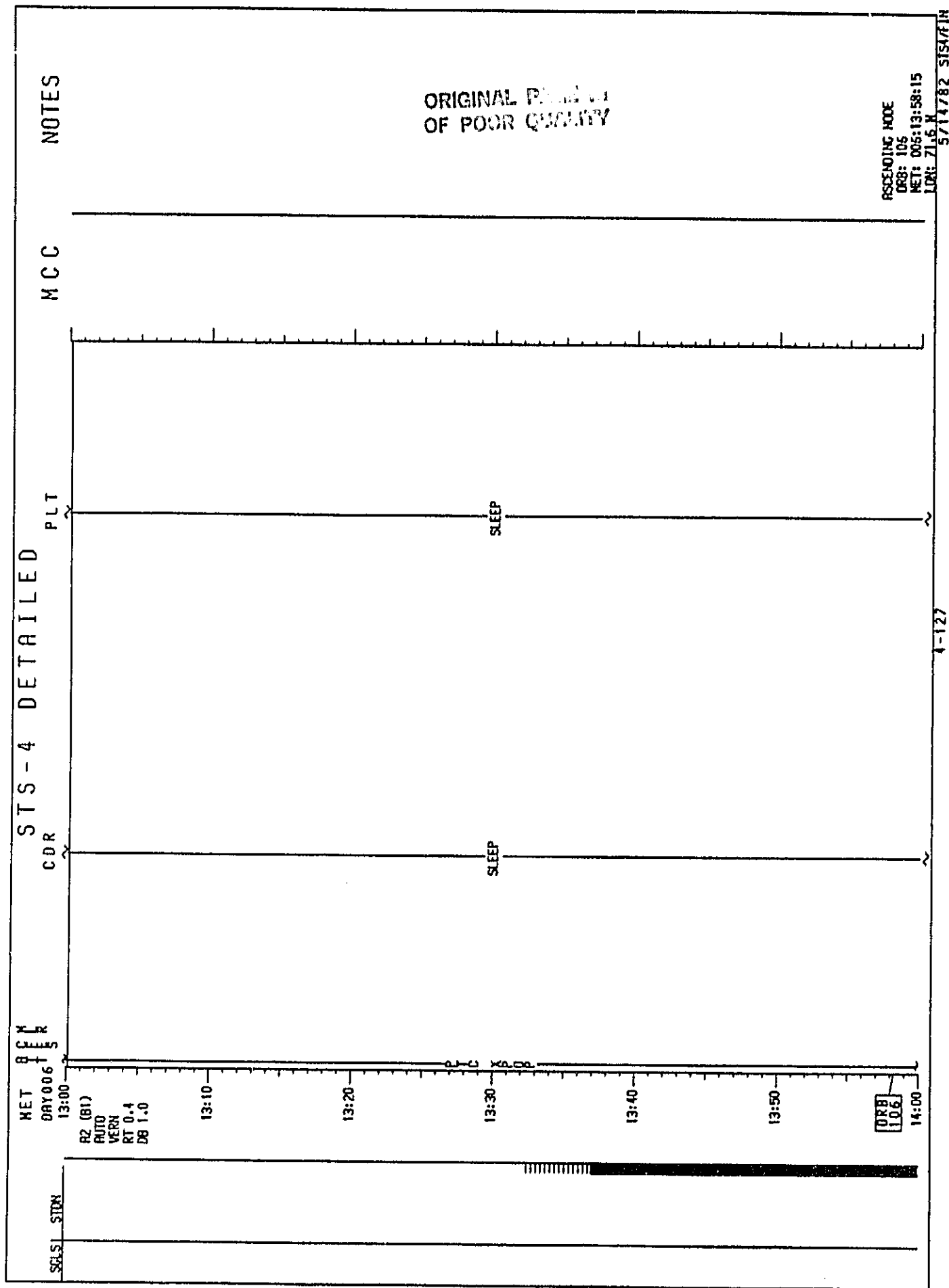
AGD I

CMH I

STS I

CMH I

ORR I



FLT DAY 8



NET 90006  
KCS  
K.R

334

173

CDR

ORIGINAL FILED IN  
OF POOR QUALITY

UPLINK  
ORBITER S.V.

0038 1040/0038  
SM CKPT -  
REC'D/NOT REC'D

# DEBTS

## 43375

POST SLEEP ACTIVITY  
(ORBIT OPS CAL, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

Shave electrode sites, if reqd

A2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

**INDEX**

7-11-4



# STS-4 DETAILED

PLT

HET 0000  
DAY 006

COR

M31C VAC VENT NOZ HTR - OFF

AUTO MNR TO IMU ALIGN BIT

MNR OPTION: R - 248.2  
P - 248.9  
Y - 339.4

Change DPP R: ROT DISC RATE VERN - 0.2  
DAP: R/AUTO/VERN  
(16:02) Initiate MNR

R5/D5 Unstow DEORBIT POP (2)

STAR TRACKER SELF-TEST

(ORBIT OPS C/L, CMC)

IMU ALIGNMENT - S TRX

(ORBIT OPS C/L, CMC)

STAR ID: -Y: 41, DENEROLA

-Z: 50, RUIOR

RNG DIF: 85.0

AUTO MNR TO -XSL BIT

MNR OPTION: R - 252.6

P - 284.1

Y - 341

DAP: R/AUTO/VERN

(16:22) Initiate MNR

FUEL CELL PIECE - RUM (One Card)

SUPPLY WATER DUMP

(ORBIT OPS C/L, ECLS)

Dump to:

QTY A =

QTY B =

REPORT: IMU ALIGN RESULTS

HEAL

HEAL

ORIGINAL PAGE 11  
OF POOR QUALITY

RESCENDING MODE

ORR: 108

NET: 006:15:59:11

LOW: 117.9 M

5/14/82 SISU/HIN

4-130

NOTES

MCC

Stars 41 & 50  
available from  
6/16:10 to 6/16:54

UPDATE  
H2O SPLY DUMP  
QTY TK A & B

IMU ALIGNMENT

TRX ID: 1 --- RNG ERR --- 3  
RNG 1 --- 2 ---

A X ( ) --- ( ) --- ( ) ---

A Y ( ) --- ( ) --- ( ) ---

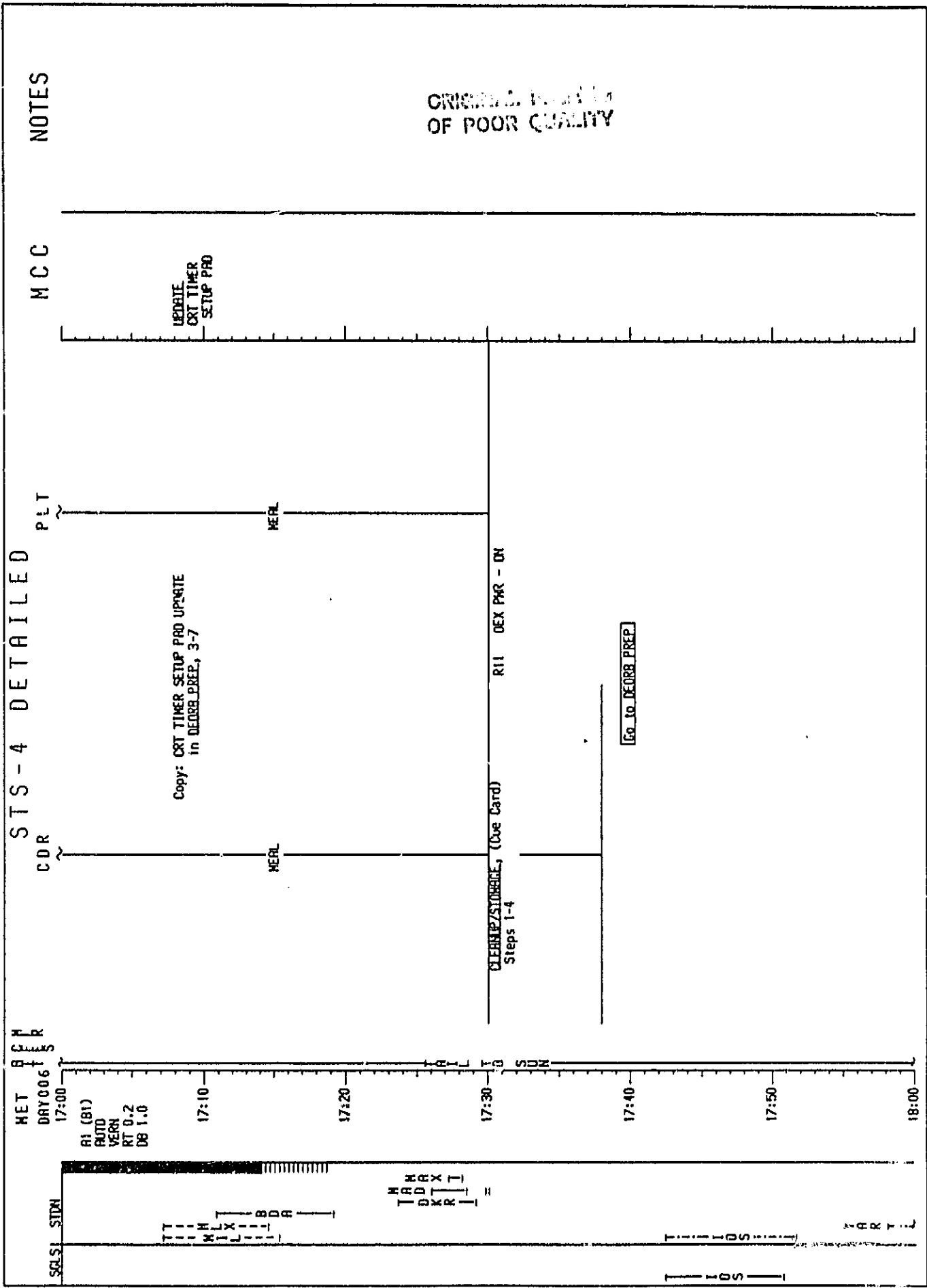
A Z ( ) --- ( ) --- ( ) ---

EXECUTION TIME: --- / --- / ---

RPT: IMU ALIGN RESULTS ---

ORR  
108

17:00



## CONTINGENCY TIMELINES

HIGH PRIORITY MISSION.....	5-3
ONE-DAY EXTENSION.....	5-55
24 HOURS AFTER EXTENSION DAY.....	5-93

HIGH PRIORITY  
MISSION

## HIGH PRIORITY MISSION

The High Priority Mission (HPM) is designed as a 74.3 hour flight lasting 3.5 flight days (FD). To enter HPM, complete the nominal FD 1 through 0/17:30. Begin HPM at 0/17:30.

### HPM ACTIVITIES

FLIGHT DAY 1 - NOMINAL CAP FD 1 THROUGH SLEEP TO 0/17:30.

FLIGHT DAY 2 - BEGIN HPM SECTION AT 0/17:30. ACTIVITIES ARE SIMILAR TO NOMINAL CAP UNTIL 1/00:15 WHEN CFES SAMPLE 6 IS RUN.

- o ATTITUDES
  - o GRAVITY GRADIENT (8 HRS vs 12 HRS)
  - o BOTTOM SUN (26 HRS vs 33 HRS)
- o IECM CONTAMINATION SURVEY (1 HR) SCHEDULED WITH TOP SUN FOR WARM THERMAL ENVIRONMENT
- o IECM PLUME SURVEY (1 HR) IN BOTTOM SUN
- o HOT FIRE TEST
- o MLR DEACTIVATION (19.5 HRS)

FLIGHT DAY 3 -

- o FRCS THERMAL SOAKBACK, PULSE MODE - F3F
- o IECM GAS RELEASE
- o FRCS THERMAL SOAKBACK, TWO FORWARD ENGINES - F2F, F3F
- o FCS CHECKOUT, PART 1 AND 2. STAY ON TAIL ONLY JETS SO NO PRCS FIRINGS IN FORWARD POD. (REQUIREMENT OF FRCS THERMAL SOAKBACK TESTS)
- o RADIATOR PERFORMANCE TEST. STOW RADIATORS 3 HRS PRIOR TO PLBD CYCLE TEST, THEN DEPLOY AFTER PLBDs OPENED
- o PLBD CYCLE TEST AT THE END OF BOTTOM SUN THERMAL TEST
- o PTC FOR SLEEP

FLIGHT DAY 4 -

- o TAIL SUN AFTER MORNING IMU ALIGN
- o NOMINAL DEORBIT PREP (5 HRS)

PRECEDING PAGE BLANK NOT FILMED

ORIGINAL PAGE IS  
OF POOR QUALITY

ORIGINAL PAGE IS  
OF POOR QUALITY

GMT	(D:H:M)	MET	(D:H:M)	CDT	(D:H:M)	FD/DY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
178:15:00/	179:03:00/	600:00:00/	000:12:00/	178:10:00/	178:22:00/	1/178 CDT	-1.2		JUNE 27, 1982	STS-4	FINAL	5/14/82
<b>HI PRIORITY MISSION</b>												
CMDR	ASCENT	PLBO TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	WAKE INIT CC	MEAL	PRE SLEEP ACT	SLEEP		
PLT	ASCENT	PLBO TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	MEAL PREF	MEAL	PRE SLEEP ACT	SLEEP		
DAY/NIGHT	ORBIT	ASCENT	PLBO TESTS	BURN PREP	BURN PREP	BURN PREP	WAKE INIT CC	MEAL	PRE SLEEP ACT	SLEEP		
EARTH TRACE M/SAR	ASCENT	PLBO TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	WAKE INIT CC	MEAL	PRE SLEEP ACT	SLEEP		
GSTDN COVERAGE	ASCENT	PLBO TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	WAKE INIT CC	MEAL	PRE SLEEP ACT	SLEEP		
SGLS COVERAGE	ASCENT	PLBO TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	WAKE INIT CC	MEAL	PRE SLEEP ACT	SLEEP		
OPS DEBR KSC EDM	ASCENT	PLBO TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	WAKE INIT CC	MEAL	PRE SLEEP ACT	SLEEP		
ATTITUDE	ASCENT	PLBO TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	WAKE INIT CC	MEAL	PRE SLEEP ACT	SLEEP		
MANEUVERS IV/VTR CFES MLR	ASCENT	PLBO TESTS	SUIT DOFF	BURN PREP	BURN PREP	BURN PREP	WAKE INIT CC	MEAL	PRE SLEEP ACT	SLEEP		
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>o PLBO CONFIG o POST ASCENT DOC o ST TEST</li> <li>o FTG 433-01 EATLORO BAY LIVER PERFORMANCE</li> <li>o FTG 434-01 FLIGHT DEBRIS INVESTIGATION</li> <li>o FTG 451-01 PLBO INITIAL ALIGN TEST</li> <li>o PAR-LP RWS TO TEMP MODE</li> <li>o FTG 466-01 RED PERFORMANCE TEST</li> <li>o FTG 441-02 INERTING VERIFICATION</li> <li>o FSD 5442-01 MLR OPERATION</li> <li>o FTG 477-02 PASSIVE GRAVITY GRADIENT</li> <li>o X-POP</li> <li>o INSTALLATION</li> <li>o INITIALIZATION</li> <li>o FTG 441-02 INERTING VERIFICATION</li> <li>o CHANGEOUT</li> <li>o FTG 5435-01 GAS OPERATION</li> <li>o FTG 477-02 PASSIVE GRAVITY GRADIENT</li> <li>o ATT HOLD</li> <li>o TERMINATION</li> <li>o FTG 441-02 INERTING VERIFICATION</li> <li>o FTG 5442-01 MLR OPERATION</li> <li>o FSD 5435-01 GAS OPERATION</li> <li>o FTG 477-02 PASSIVE GRAVITY GRADIENT</li> <li>o ATT HOLD</li> <li>o TERMINATION</li> <li>o FTG 441-02 INERTING VERIFICATION</li> </ul>												





GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		(D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE					
180:03:00/ 180:15:00		001:12:00/ 002:00:00		179:22:00/ 180:10:00				7/179		2.1				JUNE 29, 1992		STS 4		FINAL		5/14/82					
HI PRIORITY MISSION																									
GMT : 180 3		13		14		15		16		17		18		19		20		21		22		23		24	
FD 2		13		14		15		16		17		18		19		20		21		22		23		24	
MET : 001 12		13		14		15		16		17		18		19		20		21		22		23		24	
CDR		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP	
PLT		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP	
DRY/NIGHT		25		26		27		28		29		30		31		32		33		34		35		36	
ORBIT		25		26		27		28		29		30		31		32		33		34		35		36	
EARTH TRACE W/SAR		25		26		27		28		29		30		31		32		33		34		35		36	
GSTON COVERAGE		25		26		27		28		29		30		31		32		33		34		35		36	
SCLS COVERAGE		25		26		27		28		29		30		31		32		33		34		35		36	
DEORB RSC EDM		25		26		27		28		29		30		31		32		33		34		35		36	
ATTITUDE		25		26		27		28		29		30		31		32		33		34		35		36	
MANEUVERS		25		26		27		28		29		30		31		32		33		34		35		36	
EYES		25		26		27		28		29		30		31		32		33		34		35		36	
MLR		25		26		27		28		29		30		31		32		33		34		35		36	
NOTES:		25		26		27		28		29		30		31		32		33		34		35		36	

ORIGINAL PAGE 10  
OF POOR QUALITY

■ FTD 412-07 FICS THERMAL SORGBACK, PULSE MODE  
■ FTD 412-01 ATT HOLD THERMAL RESPONSE  
■ FTD 467-01 VPC FREEZER HEAT EXCHANGE DYNAMICS  
■ MANUAL  
■ FTD 412-07 FICS THERMAL SORGBACK, PULSE MODE  
■ FTD 467-02 WATER SAMPLE FREEZING  
■ FTD 412-07 FICS THERMAL SORGBACK, PULSE MODE  
■ FTD 412-07 FICS THERMAL SORGBACK, PULSE MODE  
■ FTD 5431-01 IECH

5/14/82 STS/71N

5-B

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE	
180:15:00/ 181:03:00		002:00:00/ 002:12:00		180:10:00/ 180:22:00		3/180		CDT 3.5		●		JUNE 29, 1982		STS 4		FINAL		5/14/82	
HI PRIORITY MISSION																			
GMT : 180 15		16		17		18		19		20		21		22		23		24	
FD 3		0		1		2		3		4		5		6		7		8	
MET : 002		0		1		2		3		4		5		6		7		8	
CDR		MERL		FCS CHECKOUT		FCS PERIOD		FCS PERIOD		FCS PERIOD		FCS PERIOD		FCS PERIOD		FCS PERIOD		FCS PERIOD	
PLT		MERL		FCS CHECKOUT		FCS PERIOD		FCS PERIOD		FCS PERIOD		FCS PERIOD		FCS PERIOD		FCS PERIOD		FCS PERIOD	
DAY/NIGHT		33		34		35		36		37		38		39		40		41	
ORBIT		33		34		35		36		37		38		39		40		41	
EARTH TRACE		33		34		35		36		37		38		39		40		41	
M/SRA		33		34		35		36		37		38		39		40		41	
CSTON COVERAGE		33		34		35		36		37		38		39		40		41	
SCLS COVERAGE		33		34		35		36		37		38		39		40		41	
OPS DEORB KSC		33		34		35		36		37		38		39		40		41	
EDM		33		34		35		36		37		38		39		40		41	
ATTITUDE		33		34		35		36		37		38		39		40		41	
MANEUVERS		33		34		35		36		37		38		39		40		41	
TV/VTR		33		34		35		36		37		38		39		40		41	
CFES		33		34		35		36		37		38		39		40		41	
MLR		33		34		35		36		37		38		39		40		41	
NOTES:		<p>● CHARGEOUT</p> <p>● PL DEORBIT PREP</p> <p>● FSD 5435-01 GAS OPERATION</p> <p>● FTO 412-01 ATT HOLD THERMAL RESPONSE</p> <p>● FSD 5435-01 GAS OPERATION</p> <p>● CIRC PUMPS TO OFF</p>																	

**5-10**



GMT (D:H:M)		NET (D:H:M)		CDT (D:H:M)		FD/ DQY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE	
181:15:00/ 182:03:00		003:00:00/ 003:12:00		181:10:00/ 181:22:00		4/ 181 CDT		6.4		O		JUNE 30, 1982		STS 4		FINAL		5/14/82	
HI PRIORITY MISSION																			
GMT : 181 15		17		18		19		20		21		22		23		24		25	
FD 4		1		2		3		4		5		6		7		8		9	
MET : 003 0		1		2		3		4		5		6		7		8		9	
CDR		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY	
PLT		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY		ENTRY	
DAY/NIGHT		DAY		DAY		DAY		DAY		DAY		DAY		DAY		DAY		DAY	
ORBIT		49		50		51		52		53		54		55		56		57	
EARTH TRACE W/SAR		H		H		H		H		H		H		H		H		H	
GTON COVERAGE		H		H		H		H		H		H		H		H		H	
SCLS COVERAGE		H		H		H		H		H		H		H		H		H	
OPS DEORB RSC EDM		H		H		H		H		H		H		H		H		H	
ATTITUDE TO SUM		H		H		H		H		H		H		H		H		H	
MANEUVERS TV/VTR CFES MLR		H		H		H		H		H		H		H		H		H	
NOTES:																			

NOTES

MCC

HI PRIORITY MSN

PLT

CDR

SLEEP

SLEEP

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

VEHICLE  
H2O SPILL DUMP  
QTY TK R & B

SUPPLY WATER TIME  
(ORBIT OPS C/L, EELS)  
Dump TKS R & B  
Dump to:  
QTY R = QTY B =

ASCENDING NODE  
ORB: 13  
MET: 50G:17:44:29  
LOW: 79.0 M

ORIGINAL RECORD  
OF POWER ON LINE

5/14/82 SYS/IN

5-12

NET AFTER

DAY 000

17:00  
AI (BI)  
AUTO  
VERA  
RT 0.2  
DB 1.0

17:10

17:20

17:30

17:40

ORB  
13

17:50

19:00

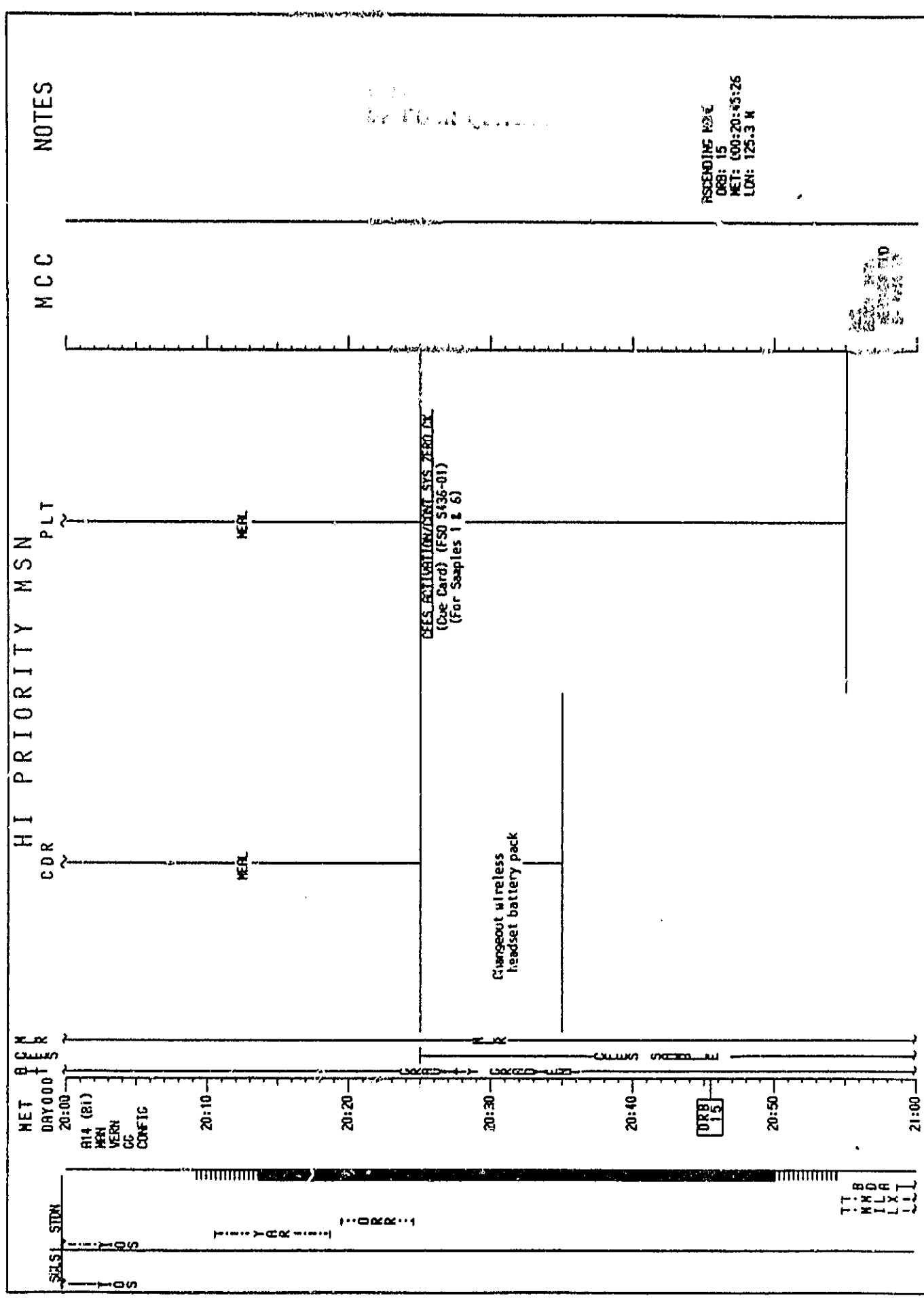
SQSI STDN

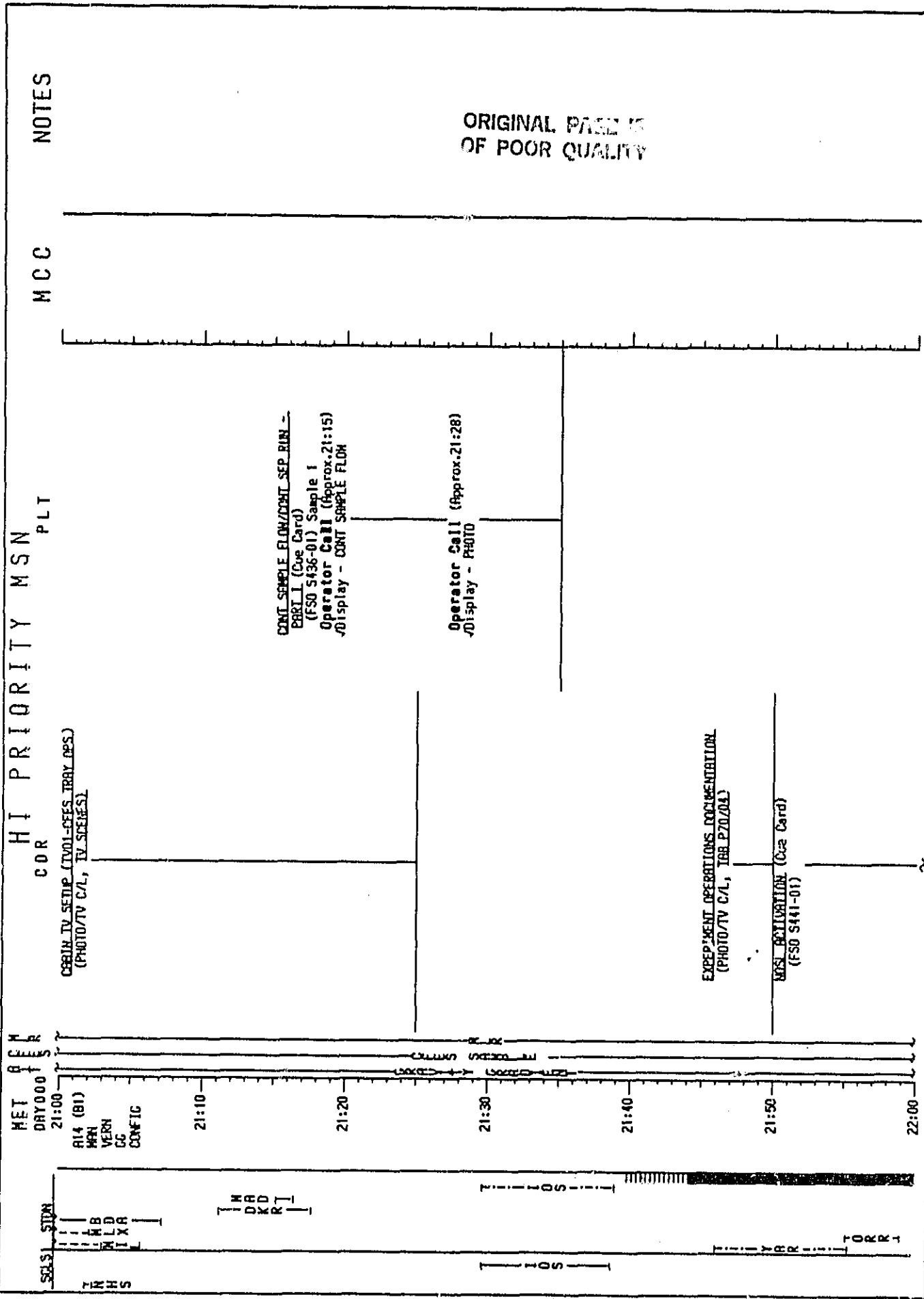
OK R T

HI PRIORITY MSN		PLT	MCC	NOTES
<p>SET: STDN</p> <p>18:00 AI (81) AUTO VERN RT 0.2 DB 1.0</p> <p>18:10</p> <p>18:20</p> <p>18:30</p> <p>18:40</p> <p>18:50</p> <p>19:00</p>	<p>CDR</p> <p>POST SLEEP ACTIVITY (ORBIT OPS C/L, CREW SYS)</p>	<p>PLT</p> <p>POST SLEEP ACTIVITY (ORBIT OPS C/L, CREW SYS)</p>	<p>MCC</p> <p>INSTR. CREW SM CRT - REQD/NOT REQD</p>	<p>ORIGINAL COPY IN OF FOUR QUALITY</p>
<p>TELEPRINTER MESSAGE REVIEW</p>		<p>TELEPRINTER MESSAGE REVIEW</p>		
<p>ADD MSG TO INTRUCTION MWR OPTION: R * 16.2 P * 172.5 Y * 13.5 DPR: A/AUTO/VERN (18:32) Initiate MWR</p>		<p>FILE OUT HERE - BULL (Due Card)</p>		
<p>START TROUBLE SHOOTING (ORBIT OPS C/L, CREW) INITIAL ALIGNMENT - S TRC (ORBIT OPS C/L, CREW) STAR ID: -Y: 15, HADAR -Z: 43, RASALHAGUE ANG DIF: 84.1 CERTIFY PRESENT FREE ORBIT, OPS 2 (FTD 477-02) (ORBIT OPS C/L, CREW) (18:57) Perform step 1: (AUTO MWR TO ATTITUDE) VERN Jets: ATT ID: Per TPR message</p>		<p>ENTER DECK (ORBIT OPS C/L, EPS) Config B</p>		
<p>PCS 1(2) ON-ORBIT ACT/RECONFIG (ORBIT OPS C/L, EPS) Reconfig for SYS 2</p>		<p>Stars 15 &amp; 43 available from 0/18:39 to 0/19:15</p>		
<p>START TROUBLE SHOOTING (ORBIT OPS C/L, CREW) INITIAL ALIGNMENT - S TRC (ORBIT OPS C/L, CREW) STAR ID: -Y: 15, HADAR -Z: 43, RASALHAGUE ANG DIF: 84.1 CERTIFY PRESENT FREE ORBIT, OPS 2 (FTD 477-02) (ORBIT OPS C/L, CREW) (18:57) Perform step 1: (AUTO MWR TO ATTITUDE) VERN Jets: ATT ID: Per TPR message</p>		<p>INSTR. CREW TX ID 1, RNC ERR 2, 3 X ( ) ( ) ( ) Y ( ) ( ) ( ) Z ( ) ( ) ( ) EXECUTION TIME: / /</p>		











NOTES

三

HI PRIORITY MSN PLT

CDR

MEBL PREP (Cue Card)

**HOUSEKEEPING!**

8/INSERT NEW COLLECTOR (Cue Card)  
(FSD S436-01) Sample 1  
Operator Call (Approx.23:25)  
Display - PHOTO

Operator Call (Approx. 23:43)  
✓ Display - PHOTO

WPC FREEZER SETUP (FTD 467-01)  
Remove food from locker and  
store on food tray  
FREEZER PWR - OFF

Record time / :

**THE**

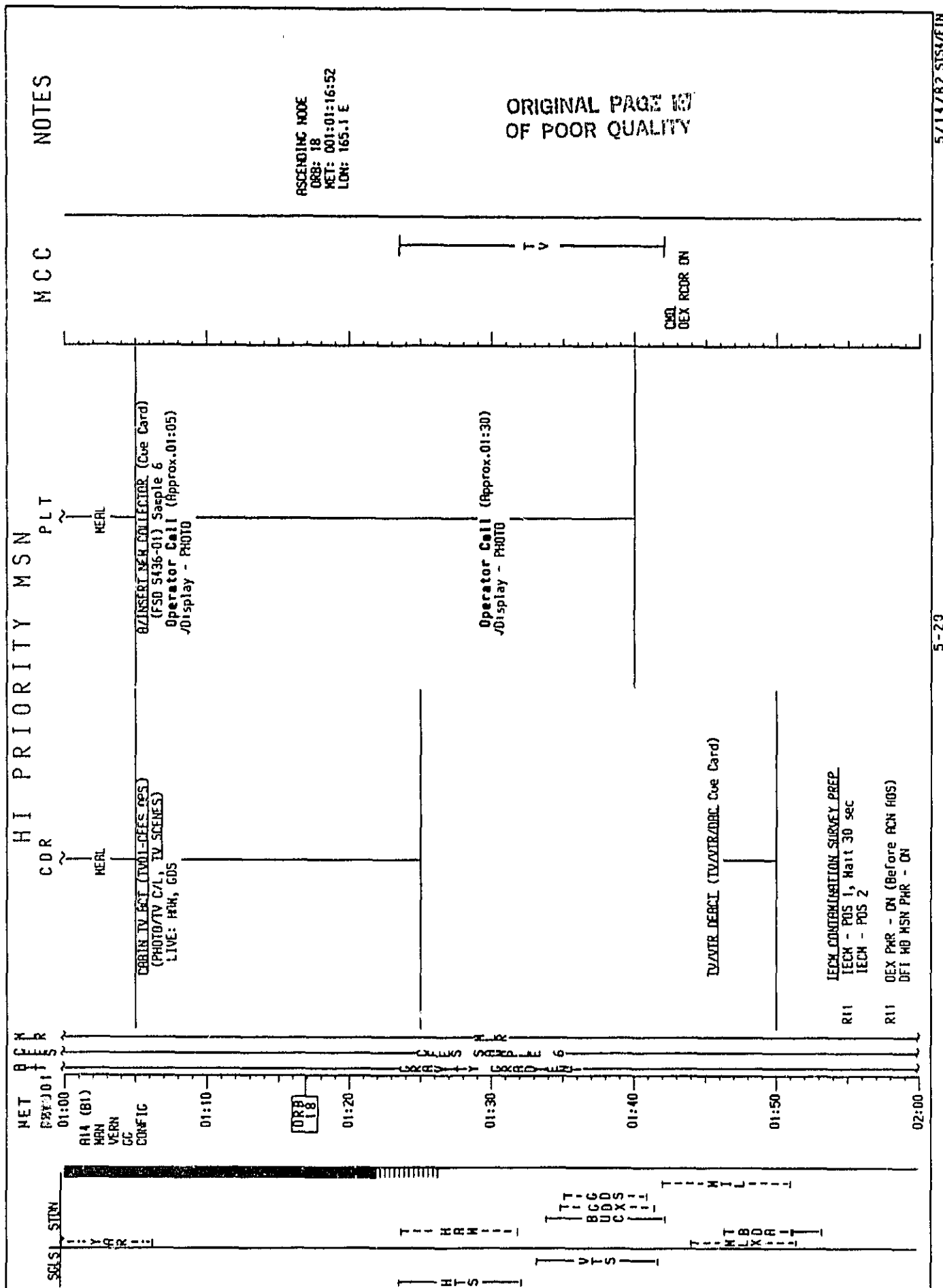
ASCENDING MODE  
ORR: 17  
MET: 000:23:46:24  
LON: 171.6 W

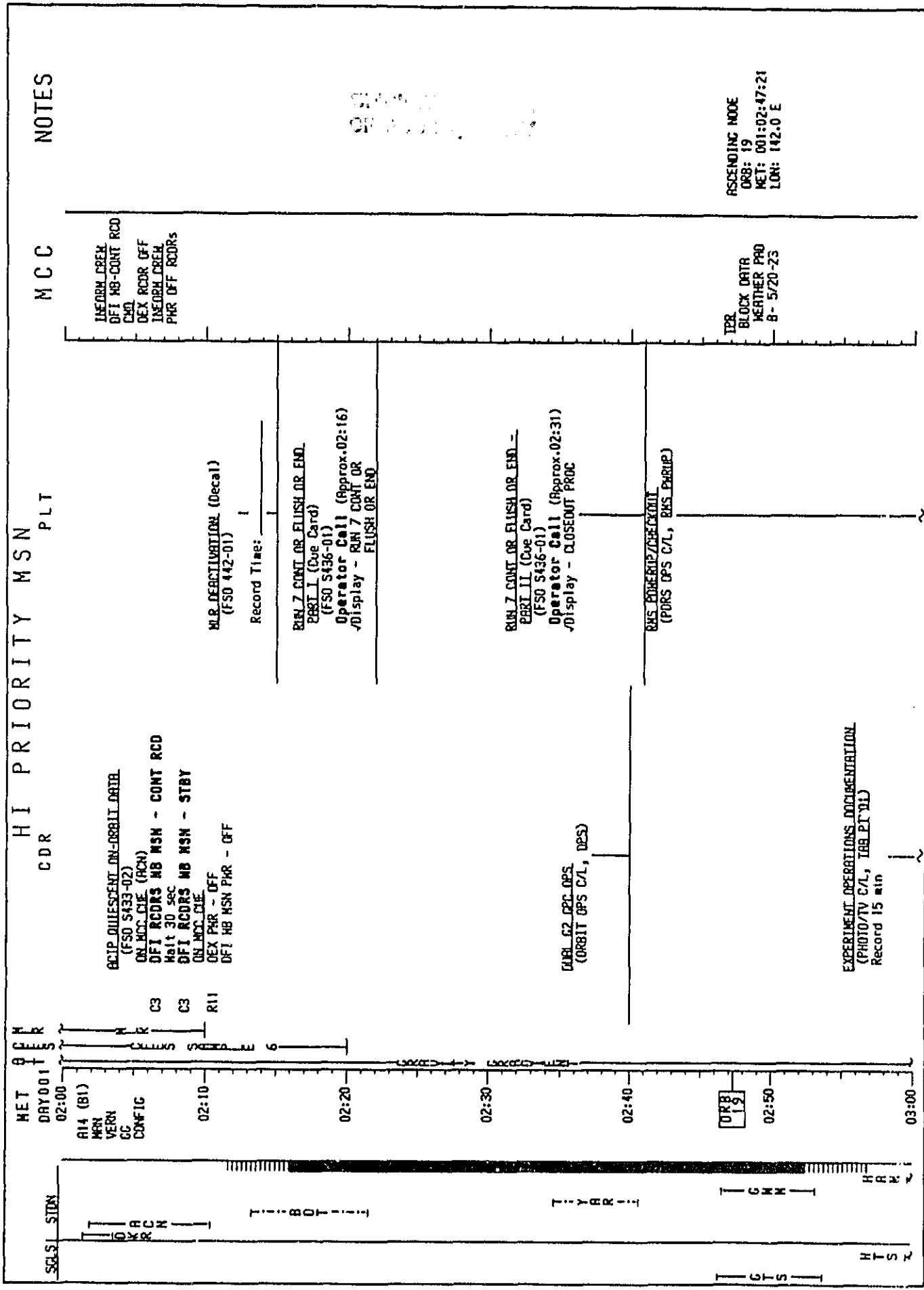
ORIGINAL PAGE IS  
OF POOR QUALITY

81-5

HIJ/ISIS 28/11/5

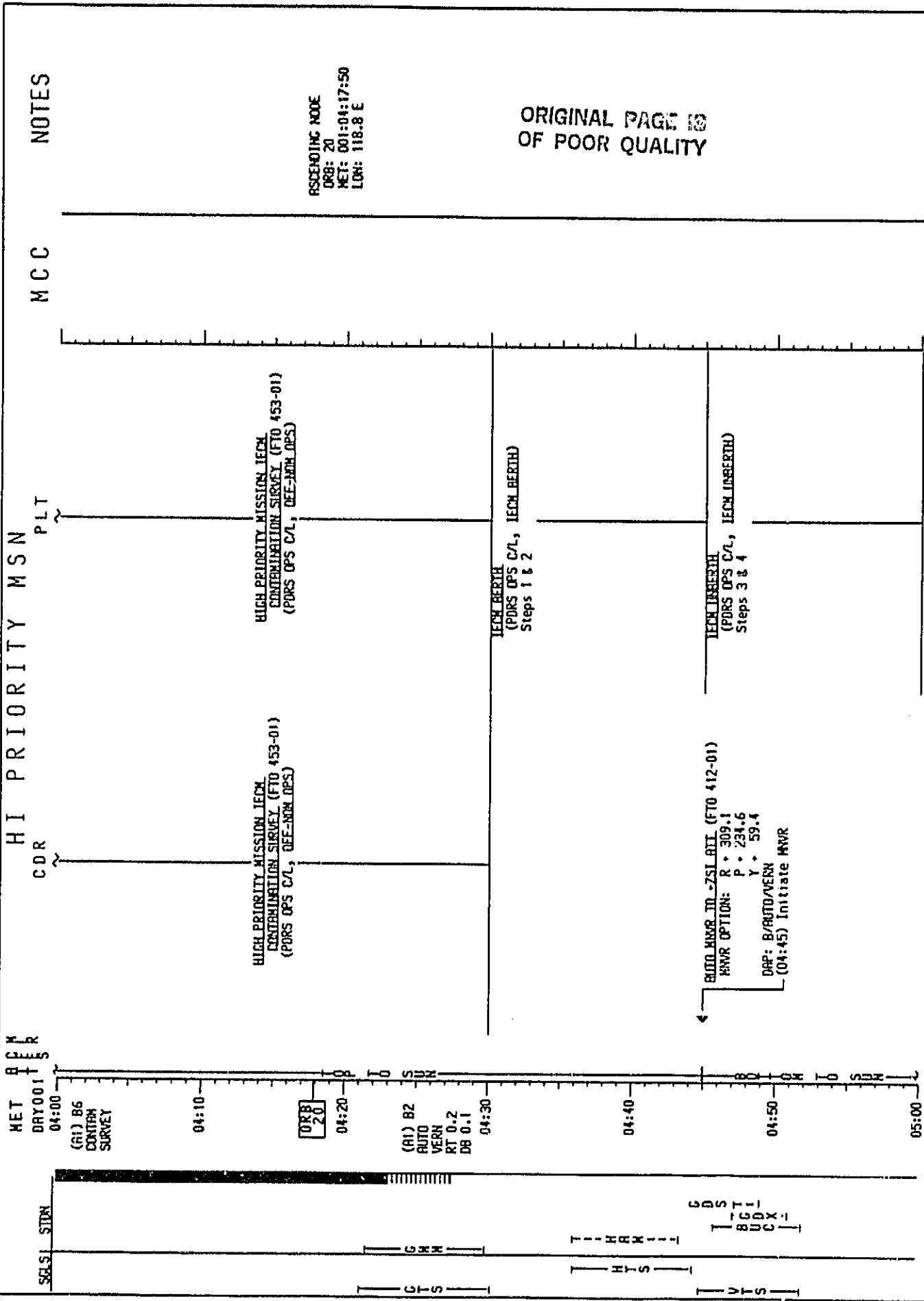












RET  
DAY 001  
05:00

SCSI STDN

CDR

HI PRIORITY MSN

PLT

MCC

NOTES

R11 (B5)  
PLUME  
SURVEY

05:10

05:20

05:30

05:40

05:50

06:00

(R1) B2  
AUTO  
VERN  
RT 0.2  
DR 0.1

DRG  
21

TECH PLUME SURVEY  
(FTD 454-01)  
(PDRS OPS C/L, PLUME SURVEY)

TECH PLUME SURVEY  
(FTD 454-01)  
(PDRS OPS C/L, PLUME SURVEY)

TECH BERTH  
(PDRS OPS C/L, TECH BERTH)

ASCENDING NODE  
DRG: 21  
MET: 001:05:48:18  
LON: 96.7 E

ORIGINAL PAGE 10  
OF POOR QUALITY

5-24

5711782 STS/FTN

# HI PRIORITY MSN

NOTES

MCC

PLT

CDR

NET  
DRY001

SEL  
STN

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

LECH BERTH  
(FORS OPS C/L, LECH BERTH)

LECH BERTH  
HZO SPLY DUMP  
QTY TX R & B

BMS PROBATION  
(FORS OPS C/L, BMS PROBATION)

HOUSEKEEPING

INITIAL MNR TO INITIAL RLL  
MNR OPTION: R - 241.7  
P - 307.6  
Y - 353.1  
DAP: A/AUTO/VERN  
(06:40) Initiate MNR

RECH PREP (Que Card)  
Prepare DAY 2, HEAL C

INITIAL MNR - S TRK  
(ORBIT OPS C/L, CMC)  
STAR ID: -Y: 42, ALPHACOR  
-Z: 15, HADOR  
ANG DIF: 89.1

BUTO MNR TO -ZSL RLL (FTD 412-01)  
MNR OPTION: R - 309.1  
P - 234.6  
Y - 59.4  
DAP: B/AUTO/VERN  
(06:55) Initiate MNR

SUPPLY WATER DUMP  
(ORBIT OPS C/L, ECLIS)  
Dump TXS R & B  
Dump to:  
QTY R = QTY B =

ORIGINAL PAGE 10  
OF POOR QUALITY

Stars 42 & 15  
available from  
1/06:34 to 1/07:20

INITIAL RLL PBN

TRK ID	1	2	3
ANG			
A X	( )	( )	( )
A Y	( )	( )	( )
A Z	( )	( )	( )
EXECUTION TIME			

5/14/82 STS461N

MET		CDR		HI PRIORITY MSN		PLT		MCC		NOTES	
MET DAY001 (R1) 82 AUTO VERN RT 0.2 DB 0.1				REPORT: IMU ALIGN RESULTS						RPT: IMU ALIGN RESULTS	
07:00 07:10 07:20 07:30 07:40 07:50 08:00				REPORT: IMU ALIGN RESULTS						ASCENDING NODE ORB: 22 MET: 001:07:18:47 LON: 72.5 E	
07:00 07:10 07:20 07:30 07:40 07:50 08:00				REPORT: IMU ALIGN RESULTS						ORIGINAL PAGE IS OF POOR QUALITY	
07:00 07:10 07:20 07:30 07:40 07:50 08:00				REPORT: IMU ALIGN RESULTS						UPLINK ORBITER S.V. TPR BLOCK DATA WEATHER PRO 8- 6/24-27	

5/14/82 51547RIN

5-26

NET  
DAY001  
(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

HI PRIORITY MSN  
CDR  
PLT

NOTES

MCC  
MCC ONLY  
COORD C/W/FDR  
LIMITS CLEARUP  
FOR CREW SLEEP

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, IIR PL002)

ELC HOT FIRE TEST  
(ORBIT OPS C/L, RCS)

DELINK  
SPC LOGO -  
1ST COM  
ALERT  
CMO  
ROOM SLEEP  
CONFIC

EXPERIMENT OPERATIONS DOCUMENTATION  
(PHOTO/TV C/L, IIR PL002)

ELC HOT FIRE TEST  
(FTD 477-01)  
(ORBIT OPS C/L, CMC.FTDs)

SINGLE C2 DEC OPS  
(ORBIT OPS C/L, OPS)

CID REISSUED REPLACEMENT  
(4 into B)

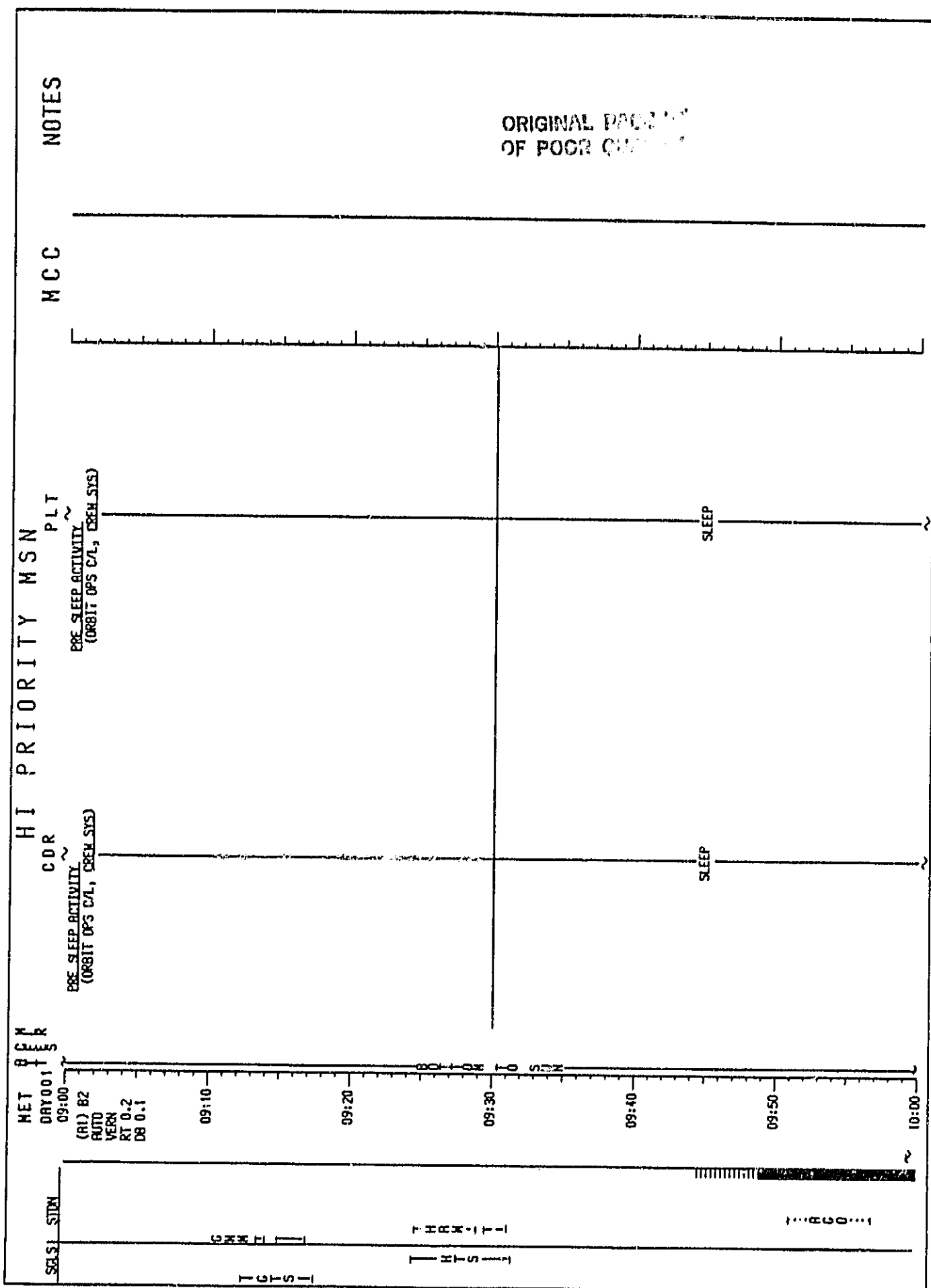
ELC CELL PIECE - RUM (Coe Card)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

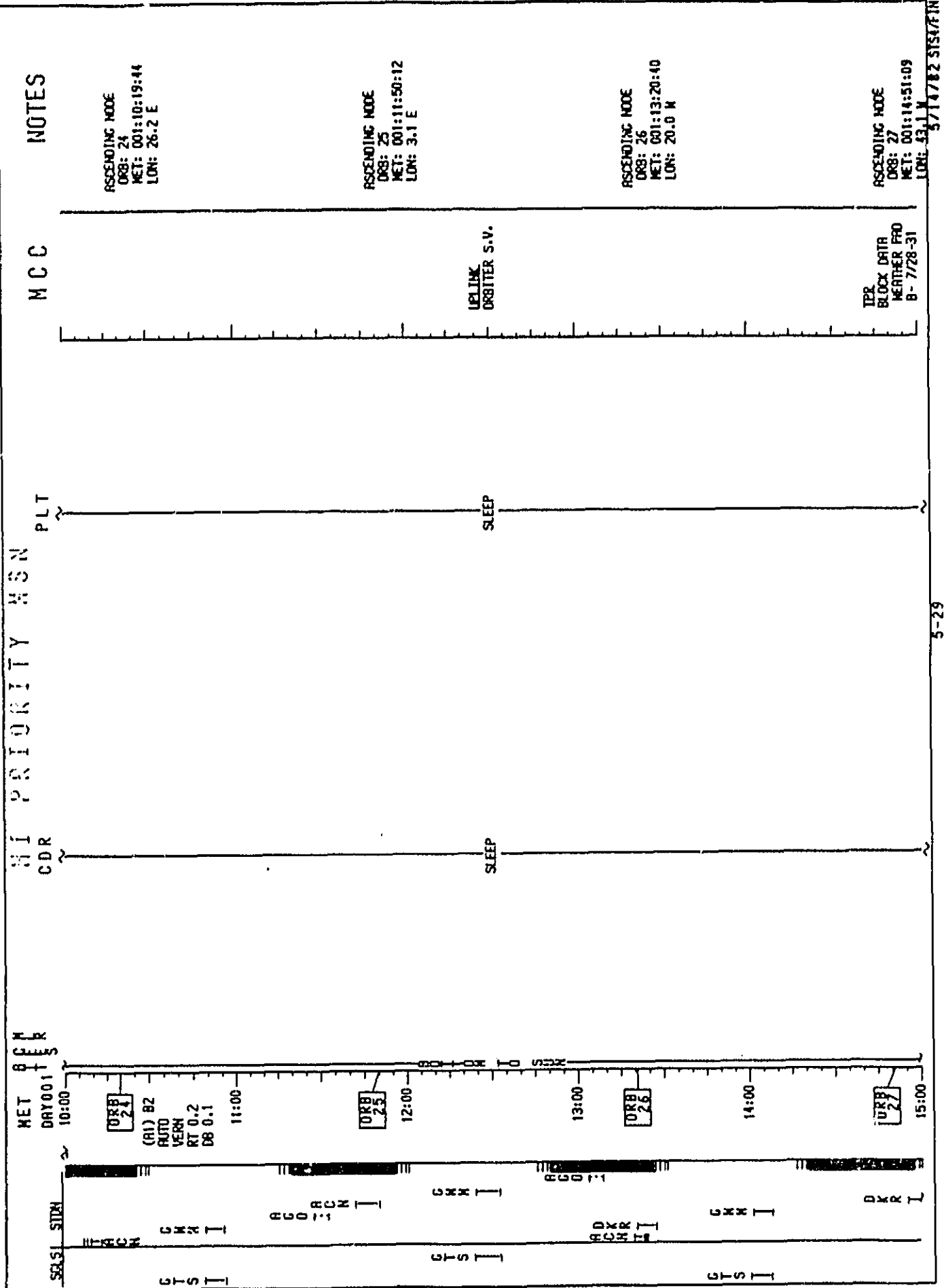
ASCENDING NODE  
ORB: 23  
MET: 01:08:49:15  
LON: 49.4 E

ORIGINAL PL 111  
OF FOUR QUALITY

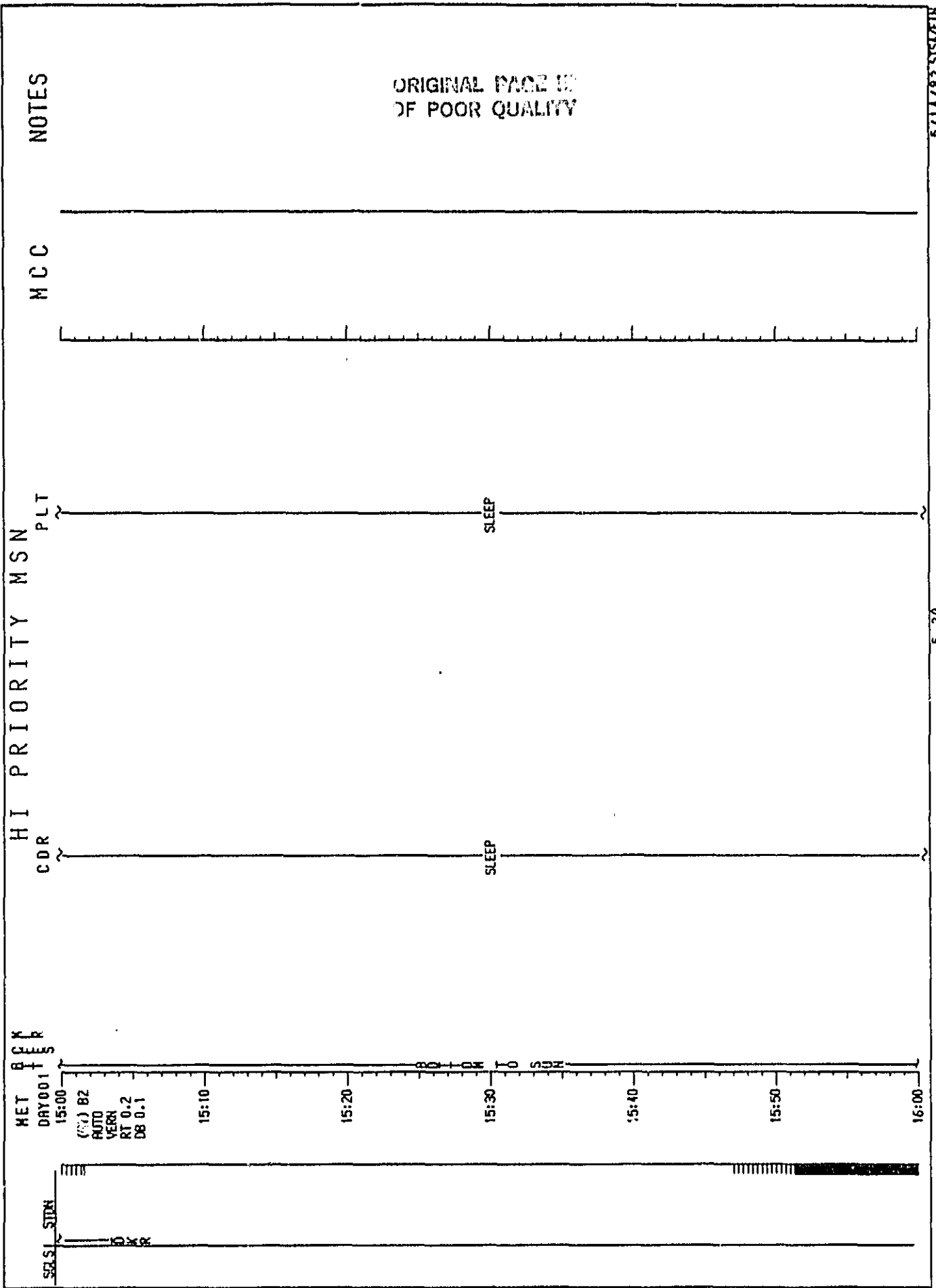


5/14/82 SIS/AFIN

5-28







5/11/82 SIS/ER

5-30

KEY  
DAY 001

SESL STON

16:00  
(RI) B2  
AUTO  
VERA  
RT 0.2  
DB 0.1

16:10

16:20

16:28  
ORB 28

16:30

16:40

16:50

17:00

DOWN TO SUN

MAN  
DVR  
DAX

HI PRIORITY MSN

CDR

PLT

SLEEP

SLEEP

MCC

NOTES

ASCENDING NODE  
ORB: 28  
MET: 001:16:21:37  
LON: 66.3 W

ORIGINAL  
OF POOR QUALITY

UPLINK  
ORBITER S.V.  
CDR  
ACDR PACKE  
CONFIC  
UPLINK  
SPC LORO -  
CLEAR DOWN  
ALERT

NOTES

MCC

HI PRIORITY MSN  
PLT  
CDR

HET  
CDR  
DRY001

SOLSI STDN

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

17:10

17:20

17:30

17:40

17:50

18:00

ORP 29

SLEEP

SLEEP

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

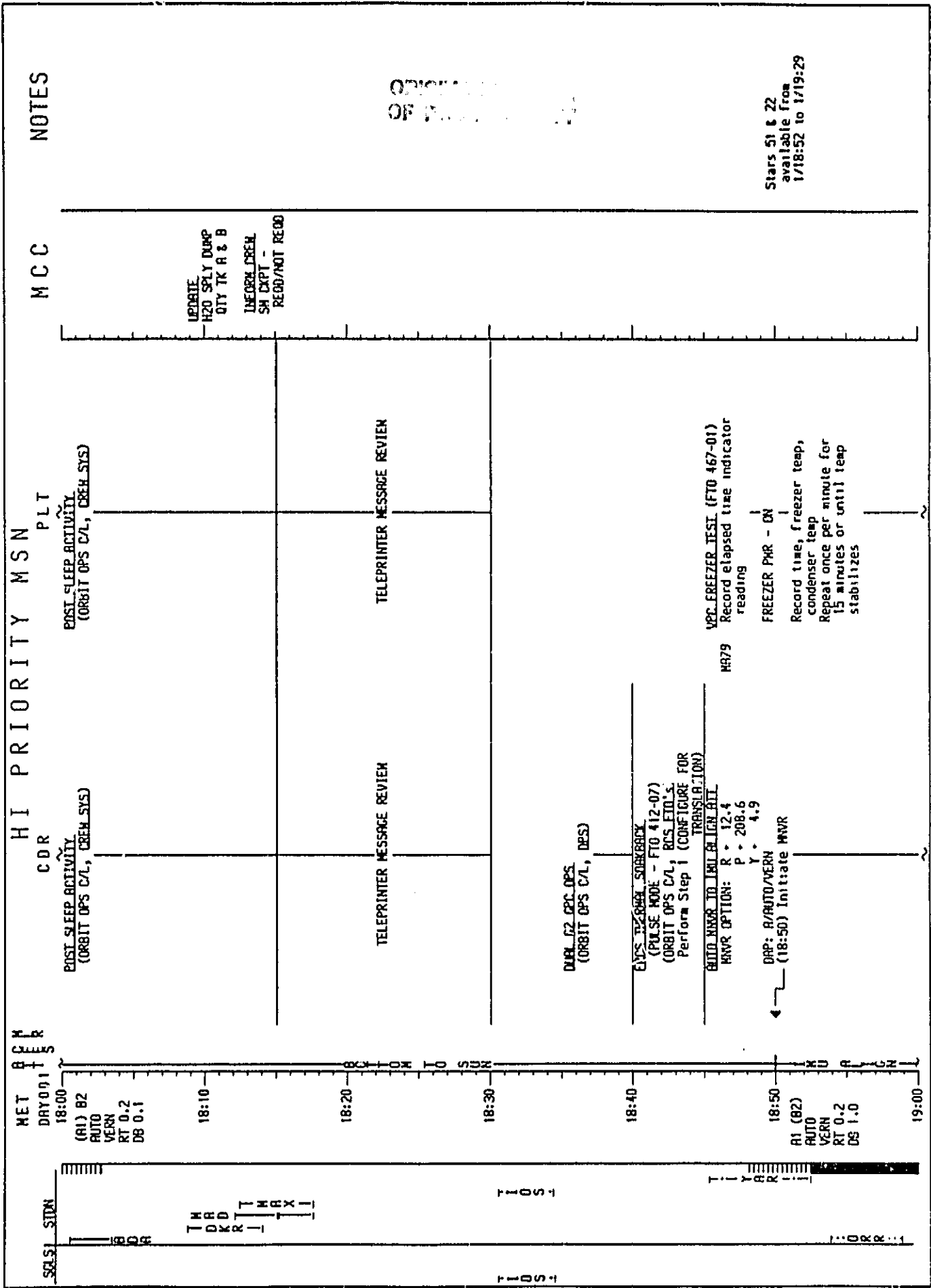
POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

ORIGINAL PAGE IS  
OF POOR QUALITY

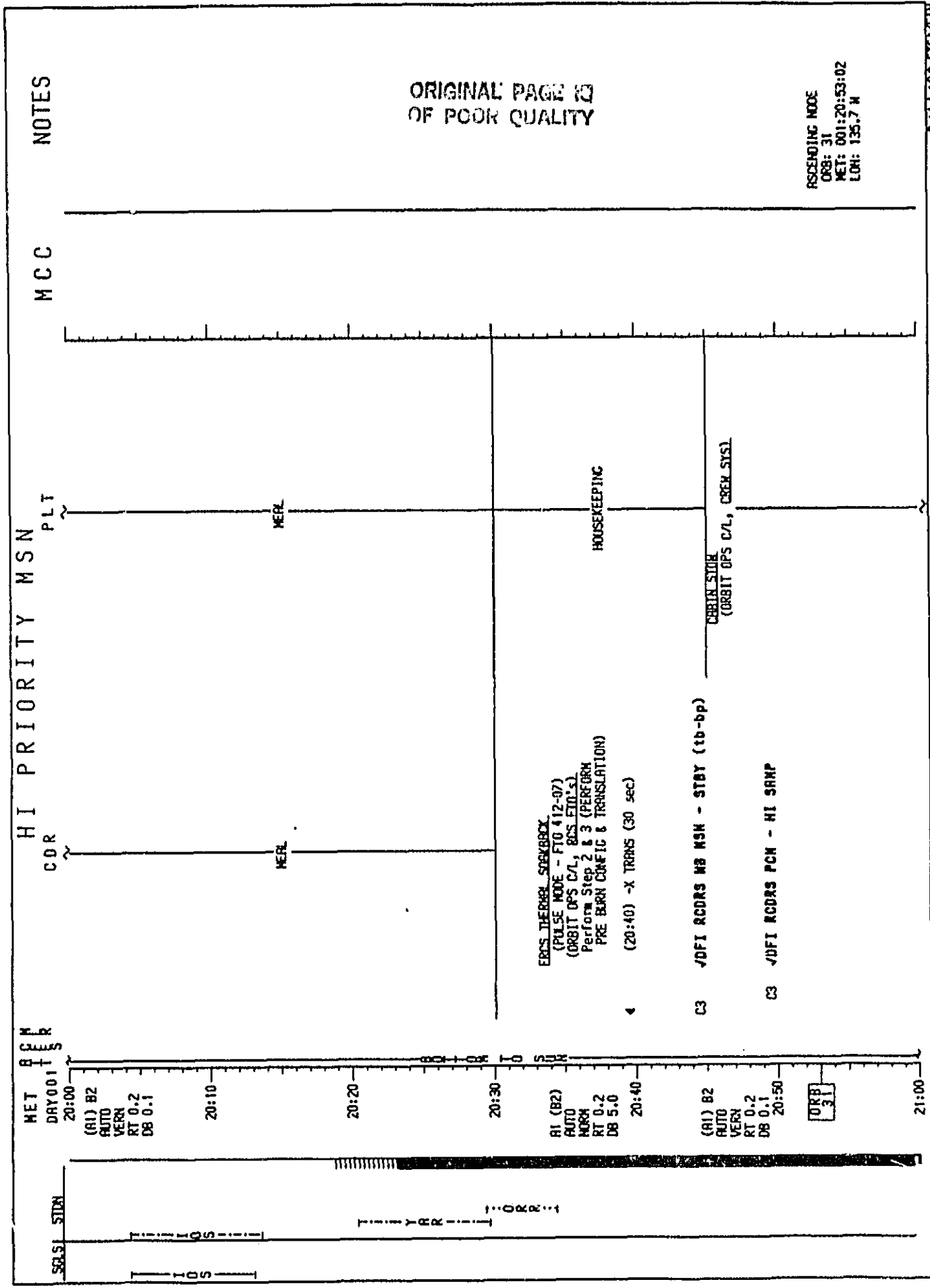
ASCENDING NODE  
ORB: 29  
MET: 001:17:52:05  
LOH: 88.4 N

5/14/82 SYS: FTR

5-32







NOTES

ORIGINAL PAGE 10  
OF POOR QUALITY

MCC

UPLINK  
ORBITER S.V.  
TP2  
BLOCK DATA  
WEATHER PRO  
B- 8/32-35

PLT

CABIN STOW

HI PRIORITY MSN

CDR

ERCS THERMAL SINKBOX  
(PULSE MODE - FTO 412-07)  
(ORBIT OPS C/L, RCS FID 51)  
Perform Step 3 (PERFORM TRANSLATION)

(21:10) -X TRANS (30 sec)

C3 ✓DFI RCORS NB MSN - STBY (tb-bp)

C3 ✓DFI RCORS PCM - HI SAMP

ERCS THERMAL SINKBOX  
(PULSE MODE - FTO 412-07)  
(ORBIT OPS C/L, RCS FID 51)  
Perform Step 3 (PERFORM TRANSLATION)

(21:40) -X TRANS (30 sec)

C3 ✓DFI RCORS NB MSN - STBY (tb-bp)

C3 ✓DFI RCORS PCM - HI SAMP

HET 0001  
DAY 001

SELS STDN

A1 (B2)  
AUTO  
NORX  
RT 0.2  
DB 5.0

21:10

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

21:20

00 1 PM TO SUN

21:30

A1 (B2)  
AUTO  
NORX  
RT 0.2  
DB 5.0

21:40

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

21:50

22:00

5/14/82 SISV/FIN

5-36

NOTES

MCC

HI PRIORITY MSN  
CDR PLT

NET  
DAY 001  
22:00

ERCS THERMAL SUBROCK  
(PULSE MODE - FTO 412-07)  
(ORBIT OPS C/L, RCS FID-5)  
Perform Step 3 (PERFORM TRANSLATION)

4 (22:10) -X TRANS (30 sec)

C3 JDFI RCORS MB MSN - STBY (tb-bp)

C3 JDFI RCORS PCN - HI SAMP

ASCENDING NODE  
DOB: 32  
MET: 001:22:23:30  
LDN: 158.9 H

ORIGINAL PAGE  
OF POOR QUALITY

ERCS THERMAL SUBROCK  
(PULSE MODE - FTO 412-07)  
(ORBIT OPS C/L, RCS FID-5)  
Perform Step 3 & 4 (PERFORM  
TRANSLATION & POST BURN RECONFIC)

4 (22:40) -X TRANS (30 sec)

DEL POWER LP (MIL)  
R11:H DFI PCN CONT 1,2,3 SCSC (three) - ON

C3 JDFI RCORS MB MSN - STBY (tb-bp)

C3 JDFI RCORS PCN - HI SAMP

DEL POWER DDMAL  
R11:H DFI PCN CONT 1,2,3 SCSC (three) - OFF



MET  
DAY 001

HI PRIORITY MSN  
CDR PLT

NOTES

MCC

(R1) B2  
AUTO  
VERN  
RT 0.2  
DS 0.1

CBS DEACTIVATION PREP (Due Card)  
(FSO S435-01)

MEAL PREP (Due Card)  
Prepare DAY 3, MEAL B

CBS IN STAN  
(ORBIT OPS C/L, CREW SYS)

REGULATORS STOP/DELAY  
(FTD 466-01)  
(ORBIT OPS C/L, ELBO FTD's)  
Perform Step 1 - STOP REGULATORS

AUTO REAR TO TECH OPS RELEASE  
TGT ID \* 2  
BODY VECTOR \* 5  
P \* 0  
Y \* 270  
OR \* 90  
DAP: #AUTO/VERN  
(23:40) Initiate TRK

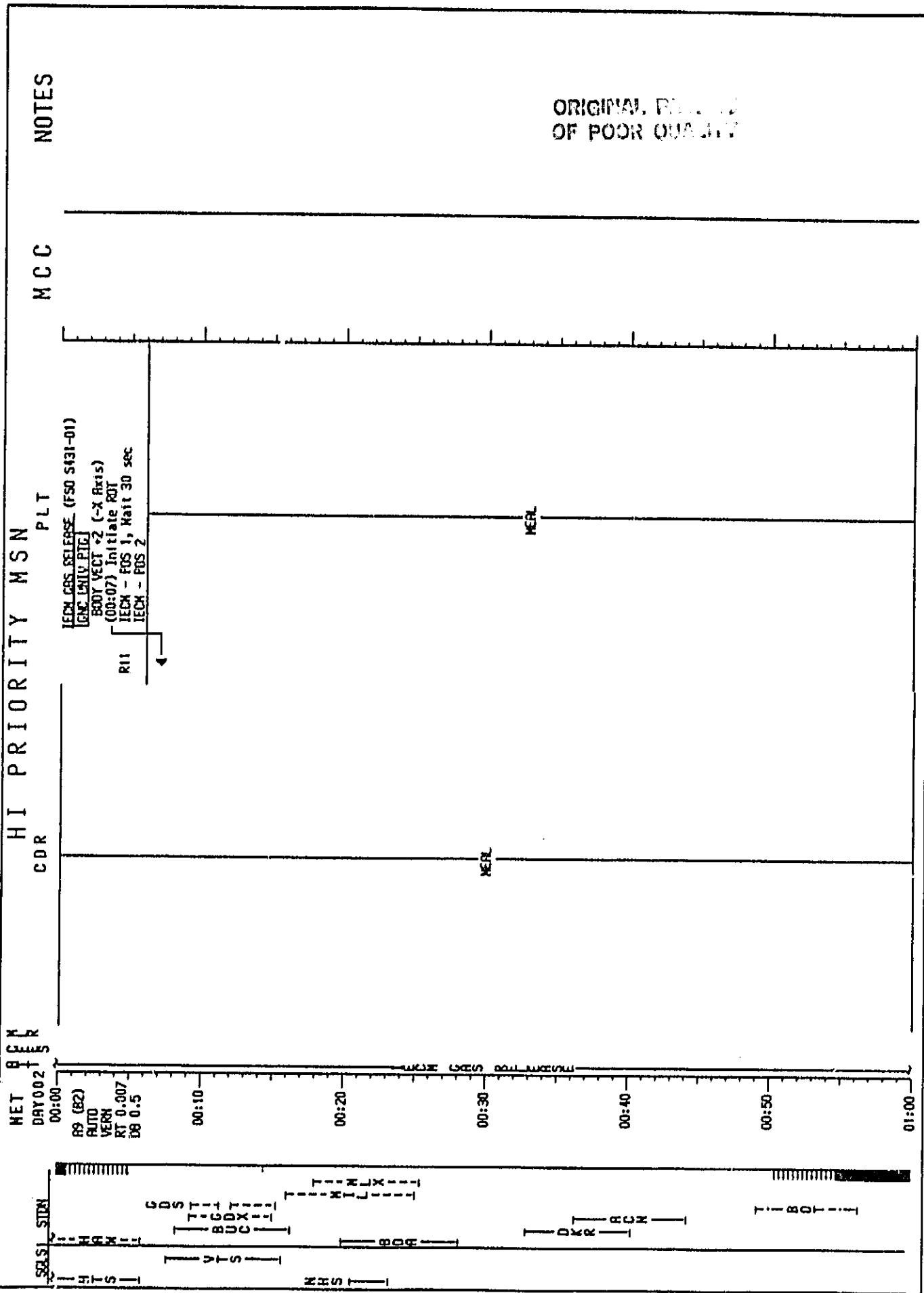
TECH OPS RELEASE (FSO S431-01)  
Attitude invr complete  
Change DAP A:  
ROT DISC RATE VERN - .007"/sec  
DB ATT VERN - 0.5"  
DAP: #AUTO/VERN

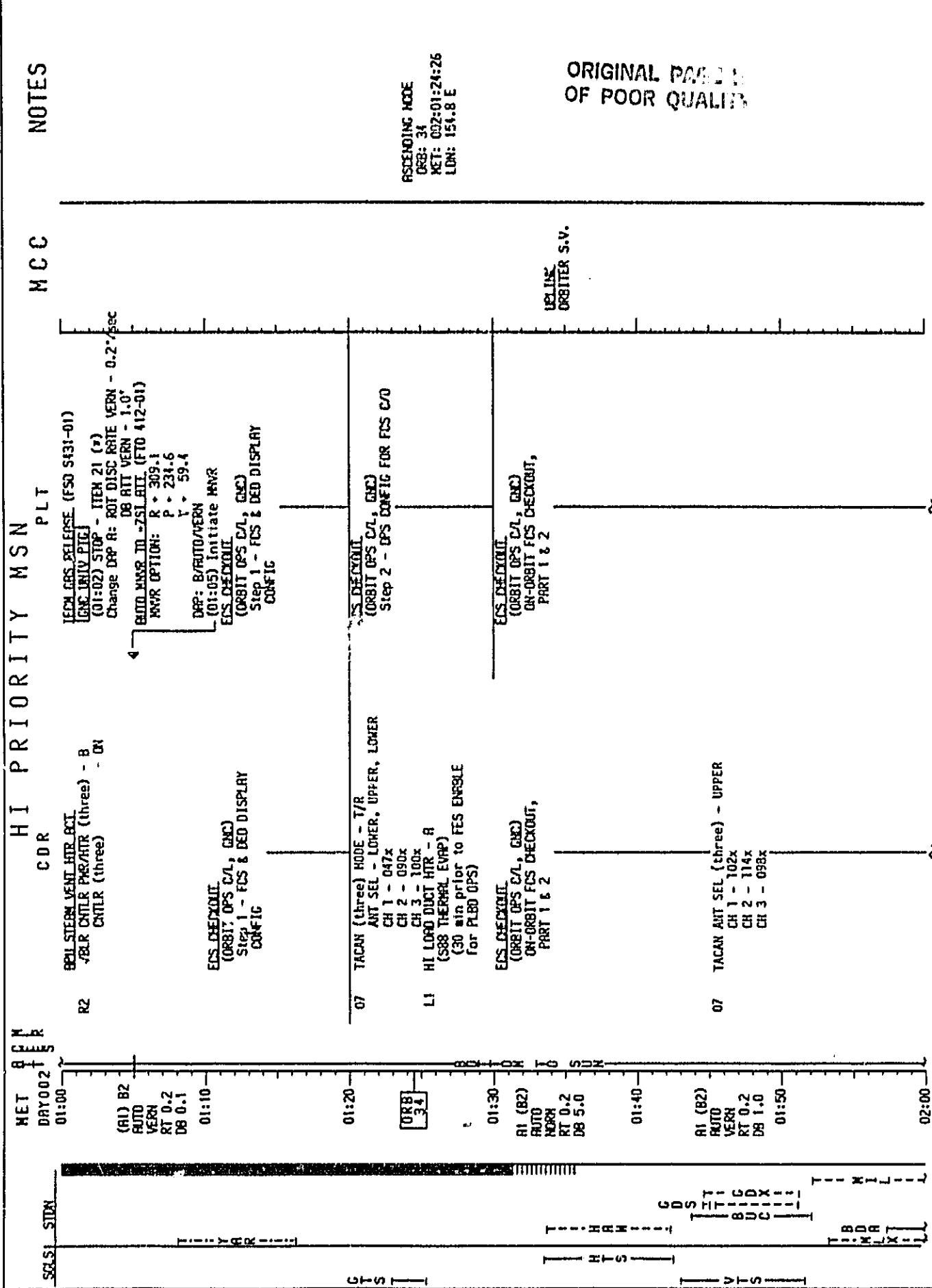
HOUSEKEEPING

0000  
33

ASCENDING NODE  
ORG: 33  
MET: 001:23:53:58  
LON: 177.5 E

ORIGINAL PAGE 1  
OF POOR QUALITY





ASCENDING NODE  
OSR: 34  
RET: 002:01:24:26  
LON: 151.8 E

ORIGINAL PAGE 1  
OF POOR QUALITY

5/14/82 515471R

5-10

NET OPER  
DAY 002

03:00  
(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

03:10

03:20

03:30

03:40

03:50  
A1 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.6

04:00

HI PRIORITY MSN  
CDR PLT

PLBO PERFORMANCE  
(THERMAL GRADIENT - FTO 451-04)

PLBO PERFORMANCE  
(THERMAL GRADIENT - FTO 451-04)

REAL PREP (Coe Card)  
Prepare DAY 3, NEAL C

(CNC 23 RCS)  
JET DES FZF - ITEM 23 EXEC (no \*)  
PRIMARY RJD DRIVER (eight) - DN  
EACS THERMAL SINKBACK (FTO 412-06)  
(DRBIT OPS C/L, RLS FTO 5)  
Perform Step 2 (PERFORM TRANSLATIONS)  
Unit THC +X move  
(03:50) -X TRANS (30 sec)

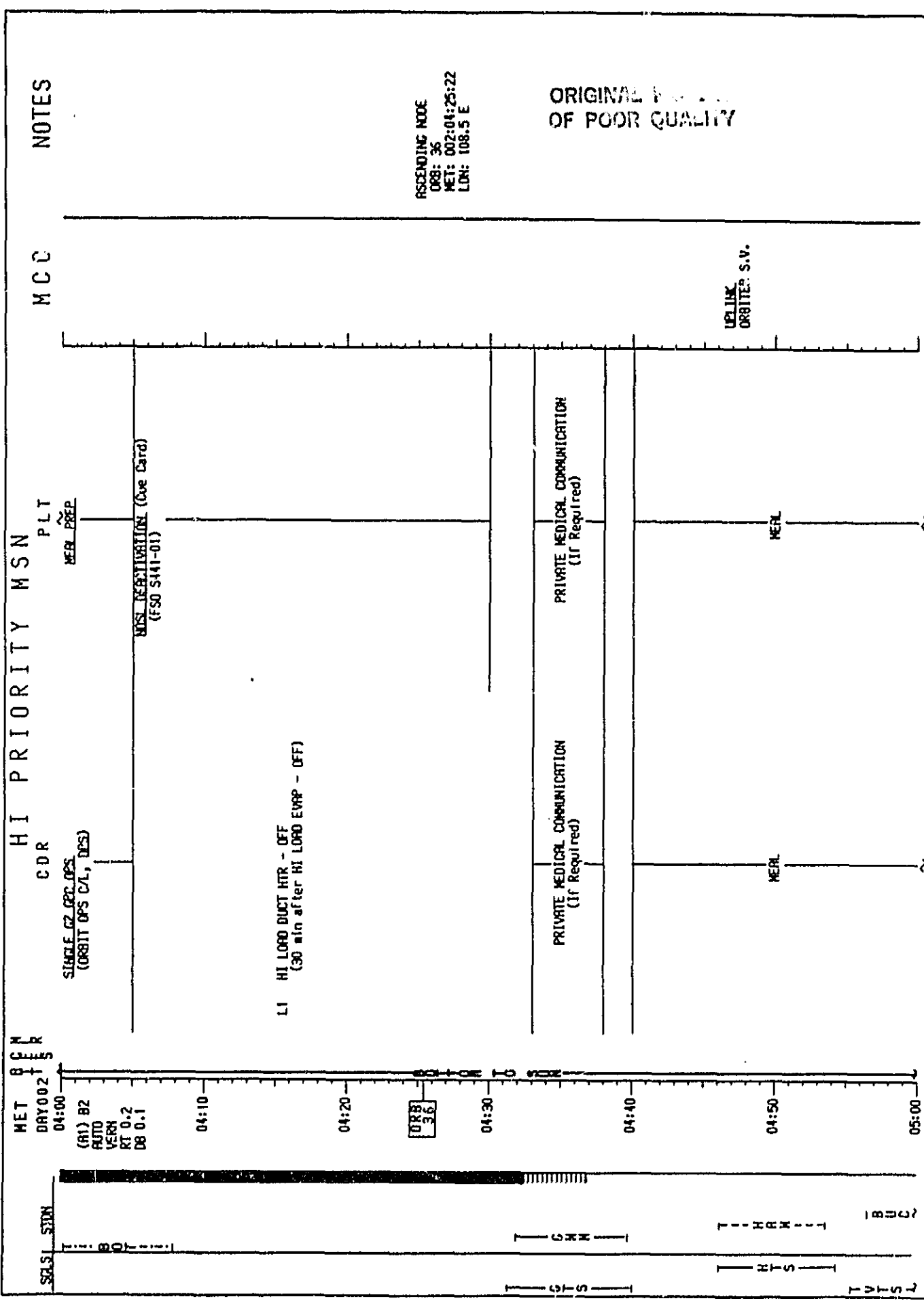
C3 /DFT RCORS MB MSN - STBY (1b-bp)

GAP: B/AUTO/VERN  
PRIMARY RJD DRIVER (eight) - OFF  
C3 /DFT RCORS PCN - HI SAMP

NOTES

MCC

ORIGINAL PAGE IS  
OF POOR QUALITY



ASCENDING NODE  
 ORB: 36  
 MET: 002:04:25:22  
 LDN: 108.5 E

ORIGINAL PHOTOGRAPH  
 OF POOR QUALITY

5/14/82 STS071R

5-43

MET 0000  
DRY002

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

SELS STON  
VTS

HI PRIORITY MSN

CDR

PLT

MCC

NOTES

ORIGINAL PAGE 10  
OF POOR QUALITY

MEPL

MEPL

CRAIN STON  
(ORBIT OPS C/L, CREW SYS)

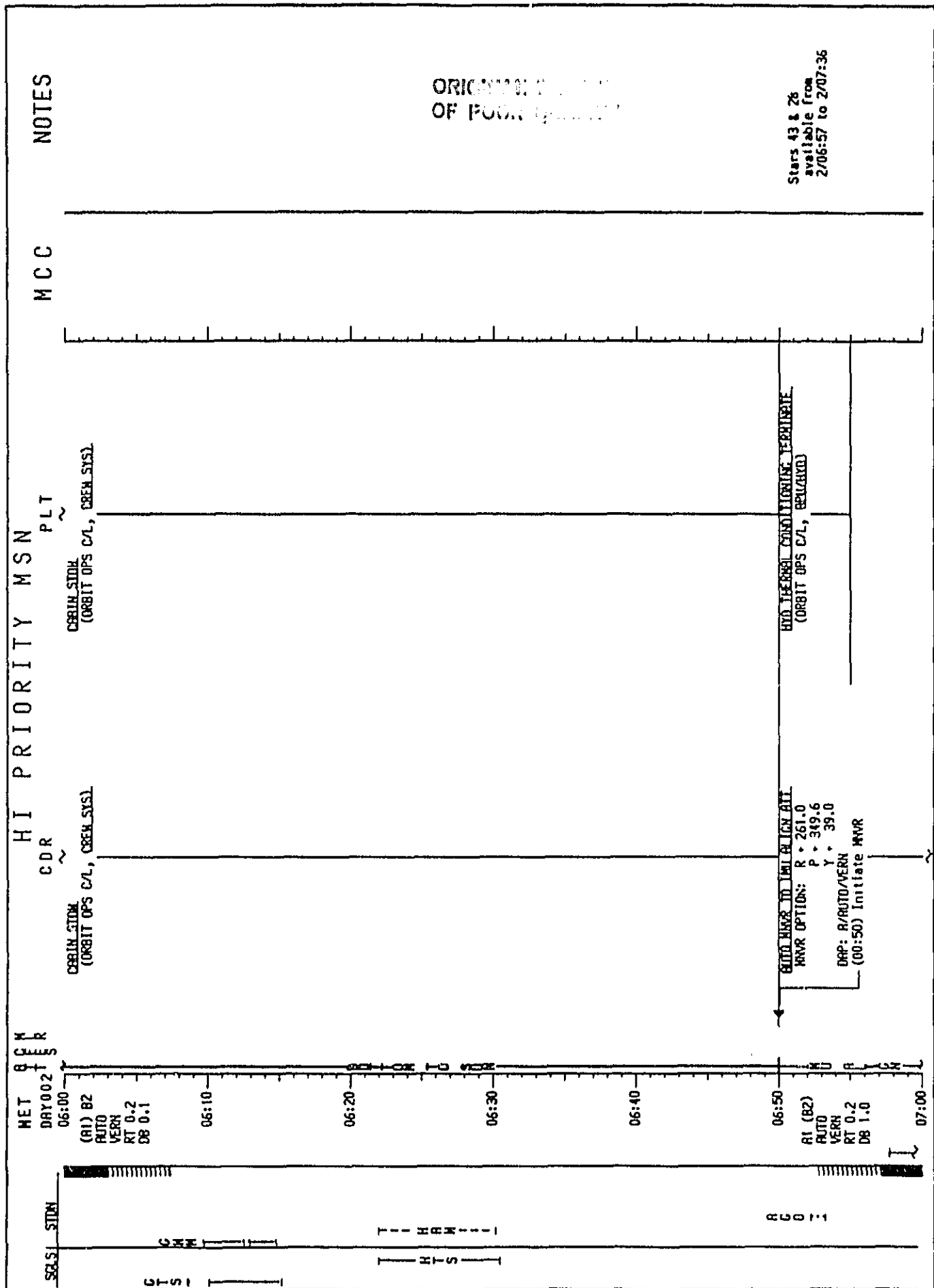
CRAIN STON  
(ORBIT OPS C/L, CREW SYS)

ORB  
37

ASCENDING NODE  
DPS: 37  
MET: 002:05:55:50  
LON: 85.3 E

5-11

5/14/82 SIS4/FIN



ORIGINAL COPY  
OF POCN 1000000

Stars 43 & 26  
available from  
2/06:57 to 2/07:36

NET 07:00  
DAY 002

07:10  
R1 (R2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

07:20  
R2 (R1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

07:30  
R3 (R0)  
AUTO  
VERN  
RT 0.6  
DB 1.0

07:40  
R4 (R3)  
AUTO  
VERN  
RT 0.8  
DB 1.0

07:50  
R5 (R4)  
AUTO  
VERN  
RT 1.0  
DB 1.0

08:00  
R6 (R5)  
AUTO  
VERN  
RT 1.2  
DB 1.0

# HI PRIORITY MSN

CDR ~

PLT

07:00  
R1 (R2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

07:10  
R2 (R1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

07:20  
R3 (R0)  
AUTO  
VERN  
RT 0.6  
DB 1.0

07:30  
R4 (R3)  
AUTO  
VERN  
RT 0.8  
DB 1.0

07:40  
R5 (R4)  
AUTO  
VERN  
RT 1.0  
DB 1.0

07:50  
R6 (R5)  
AUTO  
VERN  
RT 1.2  
DB 1.0

08:00  
R7 (R6)  
AUTO  
VERN  
RT 1.4  
DB 1.0

**IMU ALIGNMENT - 5 TX**  
 (ORBIT OPS C/L, GNC)  
 STAR ID: -Y: 43, RASALHAGUE  
 -Z: 28, AL NA'IR  
 RNC DIF: 85.0  
 REPORT: IMU ALIGN RESULTS  
 0.4 DELTA SEC. PTC. XPR - INITIATE  
 (FTO 412-01)  
 MNR OPTION: R= 165.8  
 P= 232.6  
 Y= 58.3  
 DDP: R/AUTO/VERN  
 (07:10) Initiate MNR

**When MNR to PTC ATT complete,**  
 CHANGE DDP A:  
 ROT DISC RATE VERN - 0.4 °/SEC  
 CHANGE DDP B:  
 DB ATT VERN - 1.0°  
 BODY VECT \*4  
 (07:30) Initiate ROT

**PERFORM THE ORBIT SURVEY (FTO 412-06)**  
 (ORBIT OPS C/L, RCS FTO's)  
 Perform Step 3 (RECONFIG TO NOMINAL)

**SUPPLY WATER DUMP**  
 (ORBIT OPS C/L, ECLS)  
 Dump TKS A & B  
 Dump to:  
 CITY A = CITY B =  
 ELEC CELL PURGE - AUTO (Cue Card)

**CABIN TV STOW**  
 MF57E/ Stow both cameras  
 MF57C

**PHILODOR DECONTAMINATION**  
 (OPERATIONS C/L, TBR E)

**GAS DECONTAMINATION (Cue Card)**  
 (FSO S135-01)

**SHED GAS EXCHANGER (Cue Card)**

**POST OPERATIONS DOCUMENTATION**  
 (OPERATIONS C/L, TBR P20/1A & P20/15)

**PHILODOR DECONTAMINATION**  
 (OPERATIONS C/L, TBR E)

**IMU ALIGN PHO**

TRX ID	1	2	3
RNC	( )	( )	( )
A X	( )	( )	( )
A Y	( )	( )	( )
A Z	( )	( )	( )

EXECUTION TIME: / - - - - -

RT: IMU ALIGN RESULTS

LEADITE  
H2O SPLY DUMP  
QTY TX A & B

ASCENDING NODE  
ORB: 38  
MET: 002:07:26:18  
LON: 62.2 E

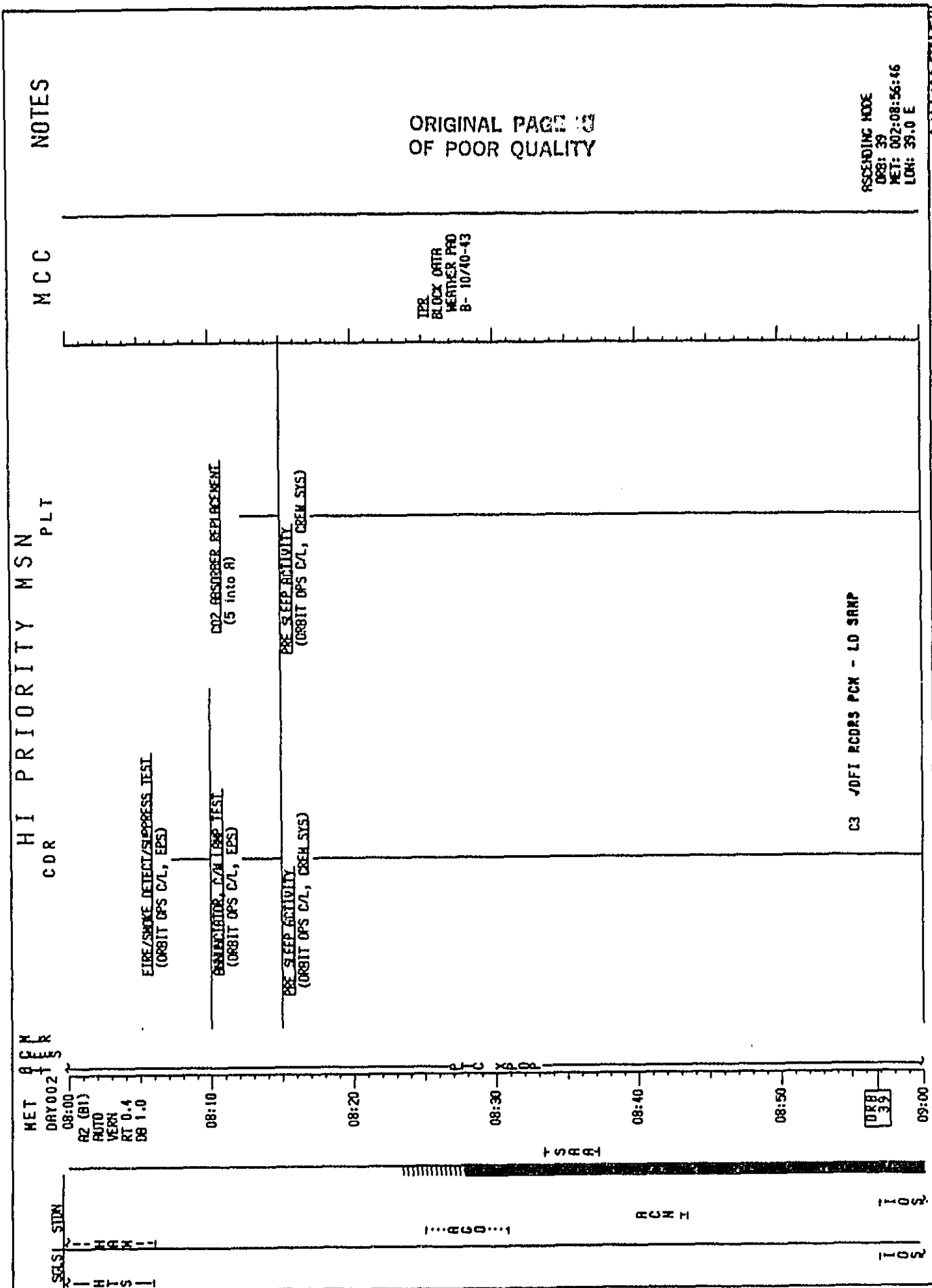
ORIGINAL PAGE 10  
OF POOR QUALITY

NOT ONLY  
COORD CSM/DBA  
LIMITS CLEANUP  
FOR ORER  
SLEEP

UPLINK  
SPC LOAD -  
1ST COMM  
ALERT  
CND  
RDDR SLEEP  
CONFIC

5/14/82 SISU/FIN





HET  
DAY 002

BCR

CDR

HI PRIORITY MSN

PLT

NOTES

MCC

ORIGINAL PAGE IS  
OF POOR QUALITY

UPLINK  
ORBITER S.V.

SLEEP

SLEEP

5-48

5/14/82 SIS/OTIR

09:00

09:10

09:20

09:30

09:40

09:50

10:00

A2 (B1)

RTTU

VERA

RT 0.4

DB 1.0

STON

100S

100S

100S

100S

100S

100S

100S

100S

100S

100S

100S

100S

100S

100S

100S

100S

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100S

100S

100S

100S

100S

100S

100S

100S

61-5

NOTES

MCC

HI PRIORITY MSN  
PLT  
CDR

NET  
DRY002  
15:00

82 (81)  
AUTO  
VERN  
RT 0.4  
DB 1.0

OK R  
H A D I

ORIGINAL PAGE 13  
OF PCOR QUALITY

SLEEP

SLEEP

5/11/82 SIS/TH

5-50

NET 0 CDR  
DRY002

16:00  
R2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

16:10

16:20

16:30

16:40

16:50

17:00

SRSL STD

MAX  
T  
M  
A  
X  
I  
T  
M  
A  
X  
I

HI PRIORITY MSN

CDR

PLT

SLEEP

SLEEP

MCC

NOTES

ASCENDING NODE  
ORB: 44  
MET: 002:16:28:04  
LON: 76.6 N

ORIGINAL PAGE 10  
OF POOR QUALITY

END  
RCOR RAKE  
CONFIC  
UPLINK  
SPC LORO-  
CLER COM  
ALERT

NOTES

MCC

HI PRIORITY MSN  
PLT

CDR

NET 0000  
DAY 002

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

Shave electrode sites, if reqd

UPDATE  
H2O SPLY DUMP  
QTY TX R & B  
INFORM DEER  
SK CKPT -  
REQD/NOT REQD

ORIGINAL PAGE 19  
OF POOR QUALITY

RECEIVING MODE  
000: 45  
NET: 002:17:59:32  
LUN: 50,8 N  
5/14/82 SIS/FR

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

5-52







## ONE-DAY EXTENSION

The STS-4 Extension Timeline is designed to follow a nominal flight up to the decision point for the 24 hour extension. This GO/NO GO decision point occurs at MET 6/00:25, prior to any mission-related activities for the nominal flight.

Also, this timeline may be used after the D/O PREP BACKOUT has been executed on FD 8.

### 24 HOUR EXTENSION CASE:

- o Execute detailed timeline pages from 6/00:00 to Deorbit Prep on FD 9
- o A period of time with no scheduled activities is provided immediately following the GO/NO GO to allow preparations for the extension of the flight.

### AFTER DEORBIT PREP BACKOUT CASE:

Begin timeline at 7/00:30 with the following changes:

- o CDR - MCC will modify PTC to -ZLV as required (5-83); omit CABIN TV STOW at 7/04:15 MET
- o PLT - Omit all activities between MET 7/02:10 and 7/04:20 (i.e., P/L DEACT, CABIN STOW, CO<sub>2</sub> ABSORBER REPLACEMENT)

# ONE-DAY EXTENSION

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE	
184:15:00/ 185:03:00/ 006:00:00/ 006:12:00/ 184:10:00/ 184:22:00		184:15:00/ 184:22:00		184:10:00/ 184:22:00		7/184 DOY		16.9		0		JULY 3, 1982		STS-4		FINAL		05/14/82	
GMT : 184 15		16		17		18		19		20		21		22		23		24	
FD 7		1		2		3		4		5		6		7		8		9	
MET : 006 0		1		2		3		4		5		6		7		8		9	
CDR		MERL		MERL		MERL		MERL		MERL		MERL		MERL		MERL		MERL	
PLT		MERL		MERL		MERL		MERL		MERL		MERL		MERL		MERL		MERL	
DAY/NIGHT		96		97		98		99		100		101		102		103		104	
ORBIT		96		97		98		99		100		101		102		103		104	
EARTH TRACE		96		97		98		99		100		101		102		103		104	
M/SAR		96		97		98		99		100		101		102		103		104	
CSTDN COVERAGE		96		97		98		99		100		101		102		103		104	
SGLS COVERAGE		96		97		98		99		100		101		102		103		104	
QPS		96		97		98		99		100		101		102		103		104	
DEGRB KSC		96		97		98		99		100		101		102		103		104	
EDK		96		97		98		99		100		101		102		103		104	
ATTITUDE		96		97		98		99		100		101		102		103		104	
MANEUVERS		96		97		98		99		100		101		102		103		104	
TV/VIR		96		97		98		99		100		101		102		103		104	
CFES		96		97		98		99		100		101		102		103		104	
MLR		96		97		98		99		100		101		102		103		104	
NOTES:		96		97		98		99		100		101		102		103		104	

ORIGINAL PAGE 1  
OF POOR QUALITY

• FT0 412-01 ATT HOLD THERMAL RESPONSE  
• FT0 412-06,08 RCS THERMAL SORABOX, TWO TWO ONE L PROCS ENGINE

• FT0 8 CO/NO GO

05/14/82 515071N

[illegible]

[illegible]

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE					
186:03:00/ 186:15:00		007:12:00/ 008:00:00		185:22:00/ 186:10:00		8/ 185 DOY		22.7		0		JULY 5, 1982		STS-4		FINAL		05/14/82					
TIC																							
GMT : 186 3		FD 9		6		7		8		9		10		11		12		13		14		15	
FD 8		13		5		14		15		16		17		18		19		20		21		22	
MET : 007 12				-6		-5		-4		-3		-2		-1		0		1		2		3	
CDR	SLEEP	POST SLEEP TRK NSC/IMU REVIEW	ACT	MEAL	SUIT DOWN	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	
	PLT	SLEEP	POST SLEEP TRK NSC/IMU REVIEW	ACT	MEAL	SUIT DOWN	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	CLIMBING	
DAY/NIGHT		ORBIT		120		121		122		123		124		125		126		127		128			
NON-UP/DOWN																							
EARTH TRACE W/SRA																							
CSTDM COVERAGE																							
SGLS COVERAGE																							
OPS																							
DEDRB KSC EDH																							
ATTITUDE																							
MANEUVERS																							
TV/VIR																							
CFES																							
MLR																							
NOTES:																							

ORIGINAL PAGE IS  
OF POOR QUALITY

05/14/82 515071K

5-59

☐ STRIKE SELF TEST    ☐ ENTRY CONFIC    ☐ NO SN LIST VER  
☐ LAST MERL CLEARUP    ☐ PLBD CLOSING    ☐ POST CLOSING

# STS-4 DETAILED

CDR

PLT

NOTES

MCC

MET  
DRY006  
00:00

A4 (B2)  
AUTO  
NOCH  
RT 0.2  
DB 5.0

00:20  
00:30

00:40

00:50

01:00

INDECH.DSCH  
FD 8 GO /NO GO

FD 8 GO/NO GO

ASCENDING NODE  
ORB: 97  
MET: 006:00:24:04  
LON: 135.6 E

ORIGINAL DATA  
OF POOR QUALITY

5-60

05/14/82 SIS/IN

1

NET  
02:00  
02:10  
02:20  
02:30  
02:40  
02:50  
03:00

RA (B2)  
AUTO  
NORM  
RT 0.2  
DS 5.0

SESL. STDM

CM

T H R M

H T S

CG  
TDS  
BTT  
UCL

V T S

STS-4 DETAILED  
CDR PLT

NOTES

MCC

TER  
BLOCK DATA  
WEATHER PRO  
B-25/101-104

NEEL PREP (Que Card)  
Prepare DAY 7, NEEL C

ORIGINAL FORM 11  
OF POOR QUALITY



# STS-4 DETAILED

CDR

PLT

NOTES

MCC

ASCENDING NODE  
089: 59  
MET: 006:03:25:00  
LON: 90.3 E

ORIGINAL DRAWING  
OF POOR QUALITY

LEDBATE  
H2O SPLY DUMP  
QTY TK A & B

SUPPLY WATER DUMP  
(ORBIT OPS C/L, ENLS)  
Dump TKS A & B  
Dump to:  
QTY A = QTY B =

NEEL

NEEL

5-63

05/14/82 SIS/7/IN

MET  
DRY006  
03:00

R4 (B2)  
AUTO  
NDRN  
RT 0.2  
DB 5.0

03:10

03:20

03:30

03:40

03:50

04:00

SELSI STDN

11:00S

11:00S

11:00S

11:00S

11:00S

11:00S

11:00S

11:00S

NET BOM  
DAY 006

SCS1 STN

04:00  
RA (82)  
AUTO  
NORM  
RT 0.2  
DB 5.0

04:10  
04:20  
04:30  
04:40  
04:50  
05:00

STS-4 DETAILED

CDR

PLT

MCC

NOTES

ORIGINAL PAGE  
OF POOR QUALITY

Stars 28 & 43  
available from  
6/04:33 to 6/05:13

ERS/ERS THERM SINKBOX  
(2 FND/1 AFT RCS ENG - FTO 412-06.08)  
(ORBIT OPS C/L, RCS FID's)  
Perform Step 3 (RECONFIG TO NOMINAL)

BUILD MNR TO IMI ALIGN ATT  
MNR OPTION: R +261.0  
P +349.6  
Y +39.0  
DAP: B/AUTO/VERN  
(04:32) Initiate MNR

ALIGNMENT - S BRC  
(ORBIT OPS C/L, GNC)  
STAR ID: -Y: 43, RASOLARQUE  
-Z: 28, AL NITR  
ANG DIF: 85.0

BUILD MNR TO -751 ATT (FTO 412-01)  
MNR OPTION: R +321.2  
P +224.0  
Y +51.4  
DAP: B/AUTO/VERN  
(04:52) Initiate MNR

TIME ALIGN PRO

TRX ID 1  
ANG 2  
ANG ERR 3  
X  
Y  
Z  
EXECUTION TIME: / /

ASCENDING MNR  
DSE: 100  
NET: 006:04:55:28  
LON: 67.2 E

MET  
DAY 006  
05:00

(A1) B2  
AUTO  
VERB  
RT 0.2  
DB 0.1

SQSI STDN

# STS-4 DETAILED

PLT

CDR

AUTO MWR TO 751 AIT

SINGLE C2 CPC OPS  
(ORBIT OPS C/L, OPS)

MCC

UPLINK  
ORBITER S.V.

CO2 RESORBER REPLACEMENT  
(9 into A)

EDEL CELL PURGE - RMD (Que Card)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

ORIGINAL RECORD  
OF POOR QUALITY

# STS-4 DETAILED

NET 0600  
 DRY006  
 (AI) B2  
 T AUTO  
 S VERN  
 R RT 0.2  
 A R D8 0.1

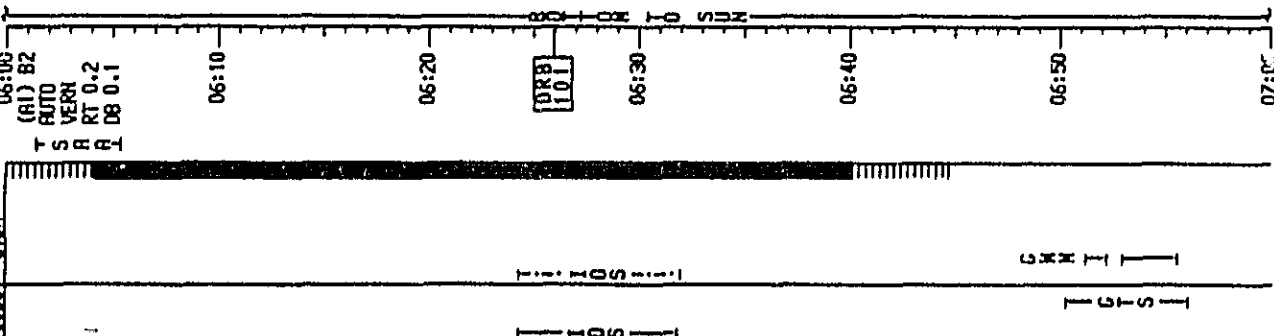
SOLS STON

PLT

CDR

NOTES

MCC



PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

SLEEP

SLEEP

WCC DAILY  
 COORD CCM/FDR  
 LIMITS CLEANUP  
 FOR OREN SLEEP

UPLINK  
 SPC LOFO -  
 1ST DOWN  
 ALERT  
 UPLINK  
 SPC LOFO -  
 10S DOWN  
 DMI  
 RDR SLEEP  
 CONFIC

ASCENDING NODE  
 DB: 101  
 MET: 006:56:25:56  
 LON: 41.0 E

ORIGINATOR:  
 OF POOR

5-5

# STS-4 DETAILED

MET 8 PM  
 DRY006

SEAS STON

12:00 (R1) B2  
 AUTO  
 VERH  
 RT 0.2  
 DB 0.1

12:10

12:20

12:30 DRY 105

12:40

12:50

13:00

CDR

SLEEP

PLT

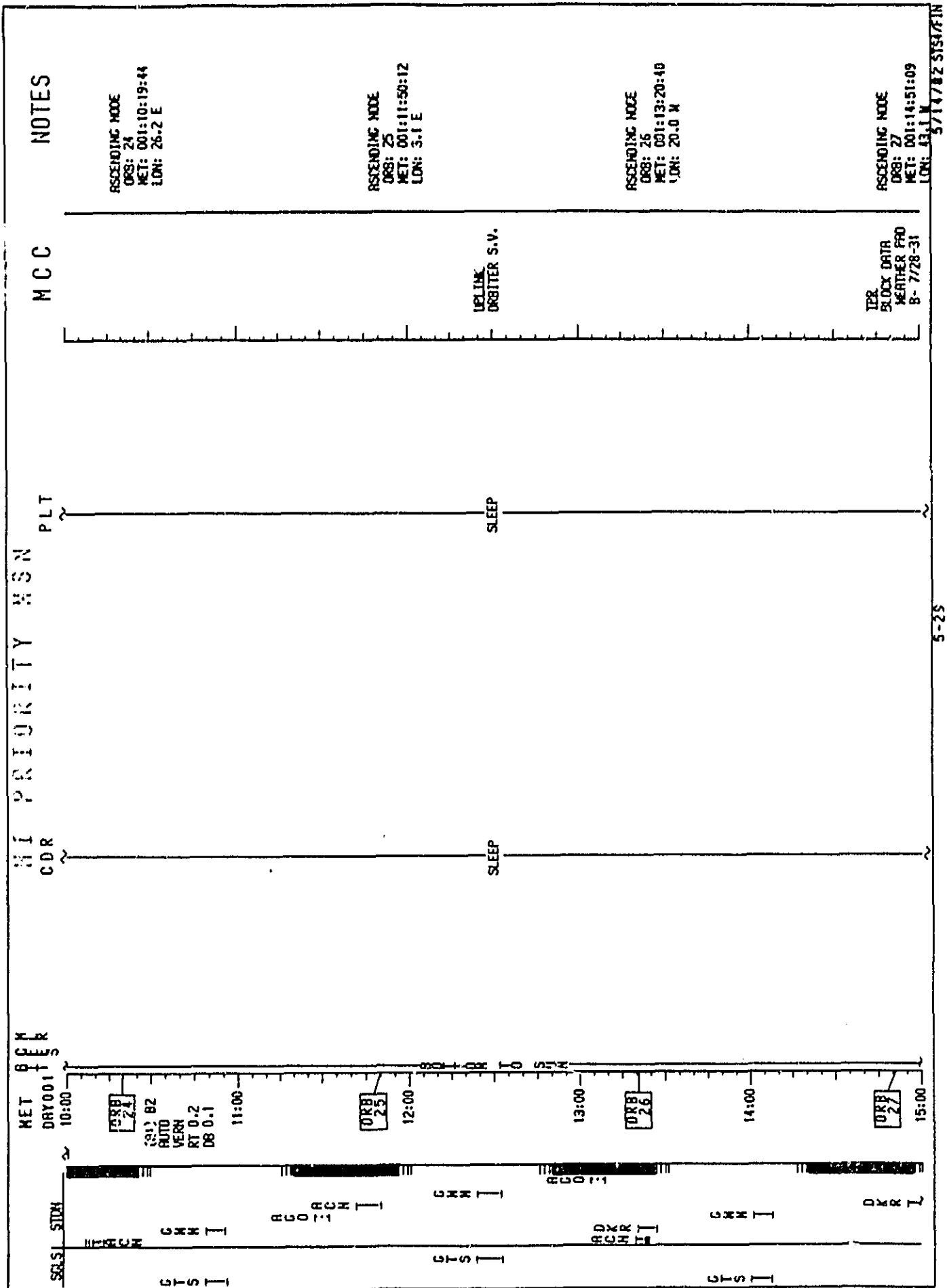
SLEEP

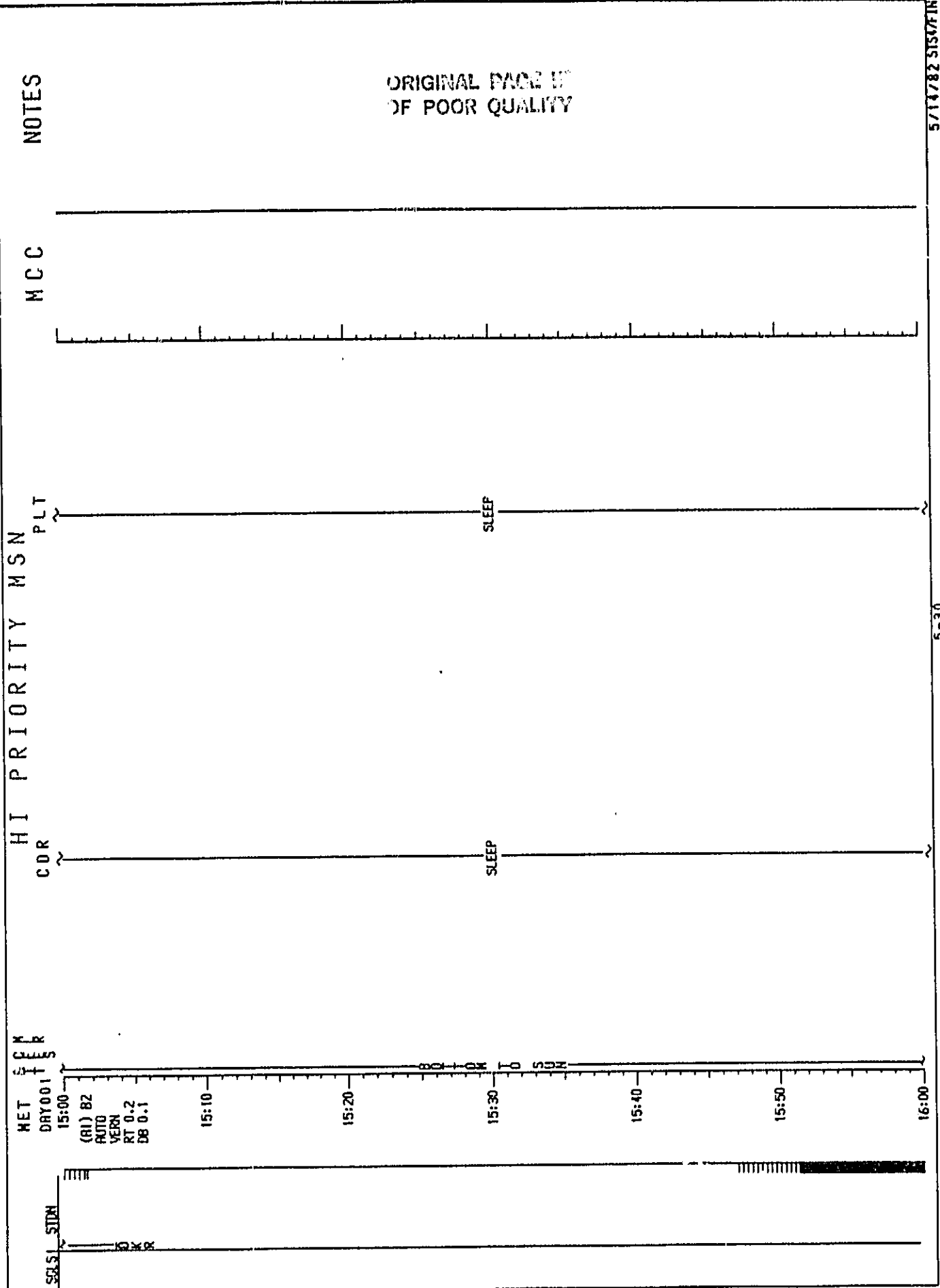
MCC

NOTES

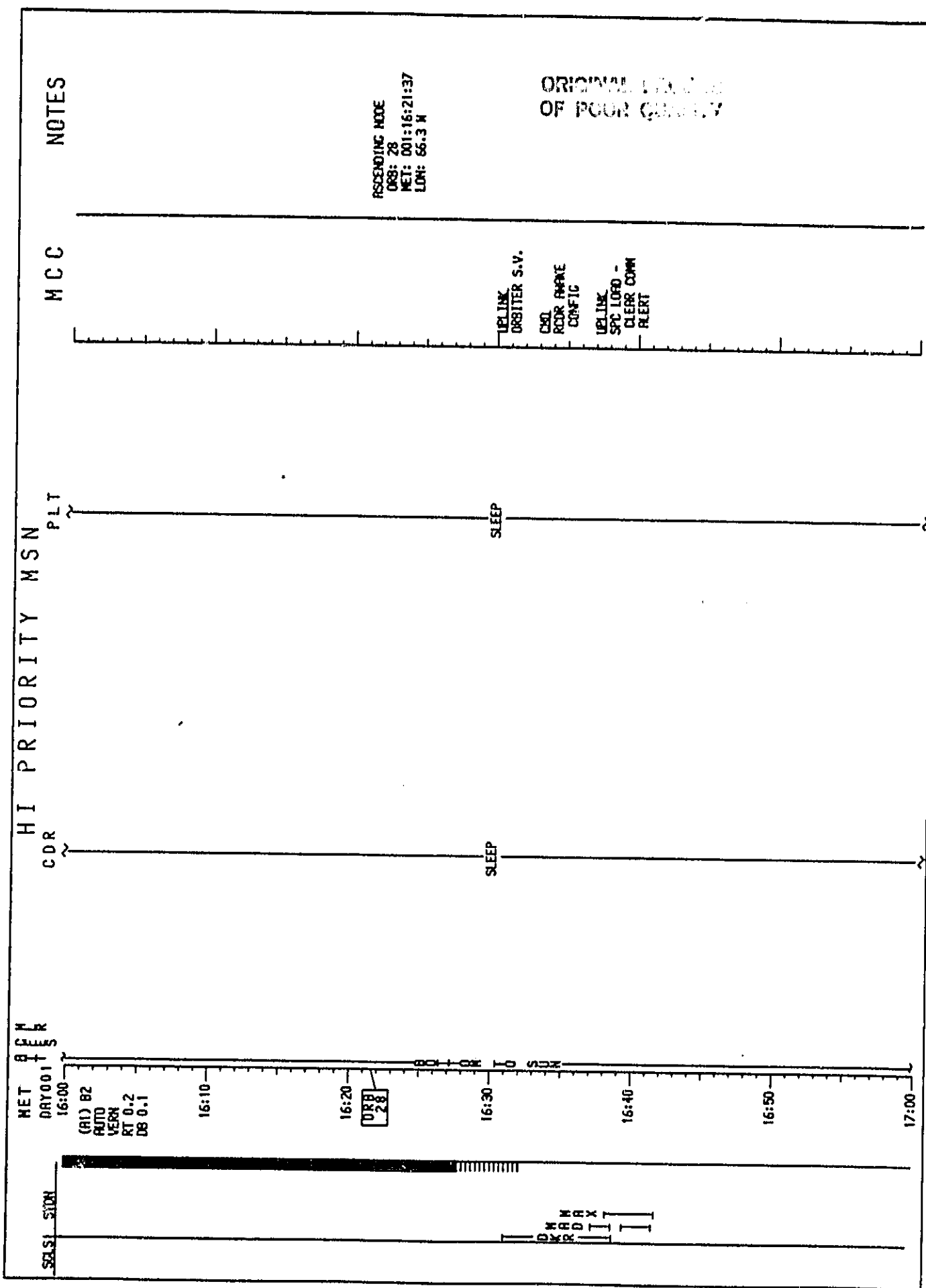
ASCENDING NODE  
 ORB: 105  
 MET: 006:12:27:48  
 LON: 48.5 N

ORIGINAL PRINT  
 OF POOR QUALITY









MET  
DAY 001  
17:00

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

SOLS1 STDN

HI PRIORITY MSN

CDR

PLT

SLEEP

SLEEP

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

NOTES

ORIGINAL PAGE IS  
OF POOR QUALITY

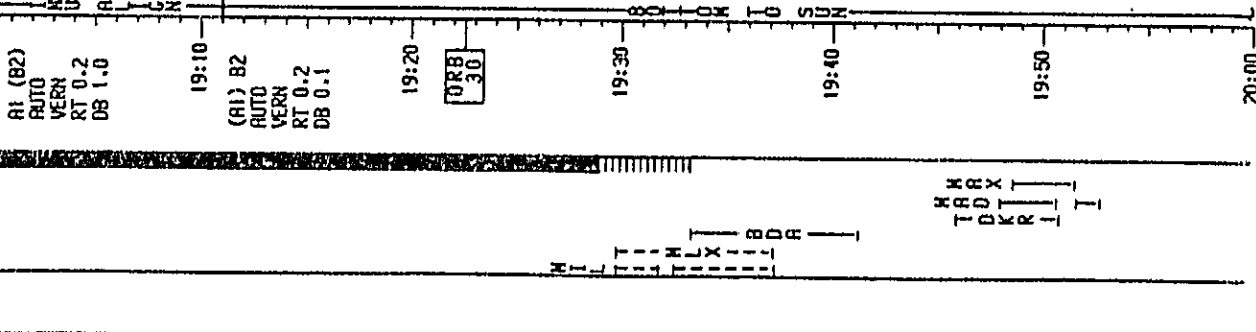
ASCENDING NODE  
ORB: 29  
MET: 001:17:52:05  
LON: 89.4 N

MET RCM		HI PRIORITY MSN		MCC		NOTES	
CDR		PLT					
<p>POST SLEEP ACTIVITY (ORBIT OPS C/L, CREW SYS)</p>		<p>POST SLEEP ACTIVITY (ORBIT OPS C/L, CREW SYS)</p>		<p>UPDATE H2O SPLY DUMP QTY TX A &amp; B INFORM CREW SN CKPT - READ/NOT READ</p>			
<p>TELEPRINTER MESSAGE REVIEW</p>		<p>TELEPRINTER MESSAGE REVIEW</p>					
<p>OVER C2 OPS (ORBIT OPS C/L, OPS)</p>		<p>ERCS THERMAL SURVEY (PULSE MODE - FTO 412-07) (ORBIT OPS C/L, RCS ETO's) Perform Step 1 (CONFIGURE FOR TRANSLATION) AUTO HMR TO LML ALIGN ATT MNR OPTION: R = 12.4 P = 208.6 Y = 4.9 DAP: R/AUTO/VERN ← (18:50) Initiate MNR</p>		<p>VPC FREEZER TEST (FTO 467-01) Record elapsed time indicator reading FREEZER PHR - ON Record time, freezer temp, condenser temp Repeat once per minute for 15 minutes or until temp stabilizes</p>		<p>Stars 51 &amp; 22 available from 1/18:52 to 1/19:29</p>	

HET  
DAY 001  
19:00

CDR  
HI PRIORITY MSN  
PLT

MCC  
NOTES



IMU ALIGN PRO

PK ID	ANC	ANC EBR
1	2	3
Δ X	( )	( )
Δ Y	( )	( )
Δ Z	( )	( )

EXECUTION TIME: /

ASCENDING MODE  
ORG: 30  
MET: 001:19:22:33  
LON: 112.6 N

RPT: IMU ALIGN RESULTS

ORIGINAL PAGE 10  
OF POOR QUALITY



NOTES

ORIGINAL PAGE 18  
OF POOR QUALITY

MCC

UPLINK  
ORBITER S.V.  
TYPE  
BLOCK DATA  
WEATHER PRO  
B- 8/32-35

HI PRIORITY MSN  
PLT

CABIN STOW

CDR

ERCS THERMAL SOWBROCK  
(PULSE MODE - FTD 412-07)  
(ORBIT OPS C/L, RCS ETD's)  
Perform Step 3 (PERFORM TRANSLATION)

4 (21:10) -X TRANS (30 sec)

C3 JDFI RCDRS MB MSN - STBY (tb-bp)

C3 JDFI RCDRS PCN - HI SRMP

ERCS THERMAL SOWBROCK  
(PULSE MODE - FTD 412-07)  
(ORBIT OPS C/L, RCS ETD's)  
Perform Step 3 (PERFORM TRANSLATION)

4 (21:40) -X TRANS (30 sec)

C3 JDFI RCDRS MB MSN - STBY (tb-bp)

C3 JDFI RCDRS PCN - HI SRMP

NET  
DAY001

A1 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

A1 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

22:00

# HI PRIORITY MSN

NOTES

MCC

PLT

SO/SI STON

MET 8 GEEK  
DAY001

22:00

ERCS THERMAL SINKBODY  
(PULSE MODE - FTO 412-07)  
(088IT OPS C/L, RCS ETO's)  
Perform Step 3 (PERFORM TRANSLATION)

(22:10) -X TRANS (30 sec)

C3 -/DFI RCORS NB MSN - STBY (tb-bp)

C3 -/DFI RCORS PCN - HI SAMP

22:20

088 32

ERCS THERMAL SINKBODY  
(PULSE MODE - FTO 412-07)  
(088IT OPS C/L, RCS ETO's)  
Perform Step 3 & 4 (PERFORM  
TRANSLATION & POST BURN RECONFIG)

(22:40) -X TRANS (30 sec)

DEL POWER UP (NIL)  
R11:H DFI PCN CONT 1,2,3 SCSC (three) - ON

C3 -/DFI RCORS NB MSN - STBY (tb-bp)

C3 -/DFI RCORS PCN - HI SAMP

DEL POWER DOWN  
R11:H DFI PCN CONT 1,2,3 SCSC (three) - OFF

23:00

ASCENDING NODE  
D88: 32  
MET: 001:22:23:30  
LON: 158.9 W

ORIGINAL PAGE  
OF POOR QUALITY

NET  
DAY 001

CDR

HI PRIORITY MSN

PLT

NOTES

MCC

ORIGINAL PAGE 1  
OF POOR QUALITY

ASCENDING NODE  
DAS: 33  
MET: 001:23:53:58  
LON: 177.9 E

5/14/82 SIS/AFR

5-38

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

23:10

ORBIT STDM  
(ORBIT OPS C/L, CSEM SYS)

23:20

23:30

REPLACES STDM/DEPLAY  
(ETO 466-01)  
(ORBIT OPS C/L, ELEM ETD's)  
Perform Step 1 - STDM RADATORS

23:40

ELIM MINOR TO TECH CRS RELEASE  
TGT ID \* 2  
BODY VECTOR \* 5  
Y \* 0  
ON \* 270  
ON \* 90  
DAP: R/AUTO/VERN  
(23:40) Initiate TRK

TECH CRS RELEASE (FSO 5431-01)

Altitude invr complete  
Charge DAP R:  
RGT DISC RATE VERN - .007"/sec  
DB ATT VERN - 0.5"  
DAP: R/AUTO/VERN

23:50

HOUSEKEEPING

002

00:00



# HI PRIORITY MSN

NET ACK  
00:00:00

CDR

PLT

NOTES

MCC

IECM CSS RELEASE (FSD 5431-01)

GNC INTRV PDC

BODY VECT +2 (-X Axis)

(00:07) Initiate ROT

IECM - FOS 1, Wait 30 sec

IECM - FOS 2

R11

←

ORIGINAL. PG. 12  
OF POOR QUALITY



MET		HI PRIORITY MSN		MCC		NOTES	
TIME	CDR	PLT					
02:00	DRY002 RT 0.2 DB 1.0	ECS CHECKOUT (ORBIT OPS C/L, GNC)	ECS CHECKOUT (ORBIT OPS C/L, GNC)				
02:10			DPS CONFIC TO NOMINAL D/O				
02:20	(A1) B2 AUTO VERN RT 0.2 DB 0.1	DPP: B/AUTO/VERN  ECS CHECKOUT (ORBIT OPS C/L, GNC) FCS & DED DISPLAY RECONFIG	ECS CHECKOUT (ORBIT OPS C/L, GNC) FCS & DED DISPLAY RECONFIG				
02:30		PLSD PERFORMANCE (THERMAL GRADIENT - FTD 451-04) (ORBIT OPS C/L, PLSD ETO's) Theodolite sightings during PLSD operations	PLSD PERFORMANCE (THERMAL GRADIENT - FTD 451-04) (ORBIT OPS C/L, PLSD ETO's) Theodolite sightings during PLSD operations				
02:40							
02:50							
03:00							

ASCENDING NODE  
ORB: 35  
MEG: 002:02:54:54  
LOH: 131.6 E

IPR  
BLOCK DATA  
WEATHER PRO  
B- 9/35-39

ORIGINAL RECORD OF POOR QUALITY

AL343515 28/11/15

MET  
DAY 002  
03:00

HI PRIORITY MSN  
CDR  
PLT

NG:ES

MCC

(A1) B2  
AUTO  
VERN  
RT 0.2  
D6 0.1

ELBD PERFORMANCE  
(THERMAL GRADIENT - FTO 451-04)

ELBD PERFORMANCE  
(THERMAL GRADIENT - FTO 451-04)

ORIGINAL PAGE 11  
OF POOR QUALITY

A1 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

ITEM 23 EXEC (no \*)

PERFORM STEP 2 (PERFORM TRANSLATIONS)

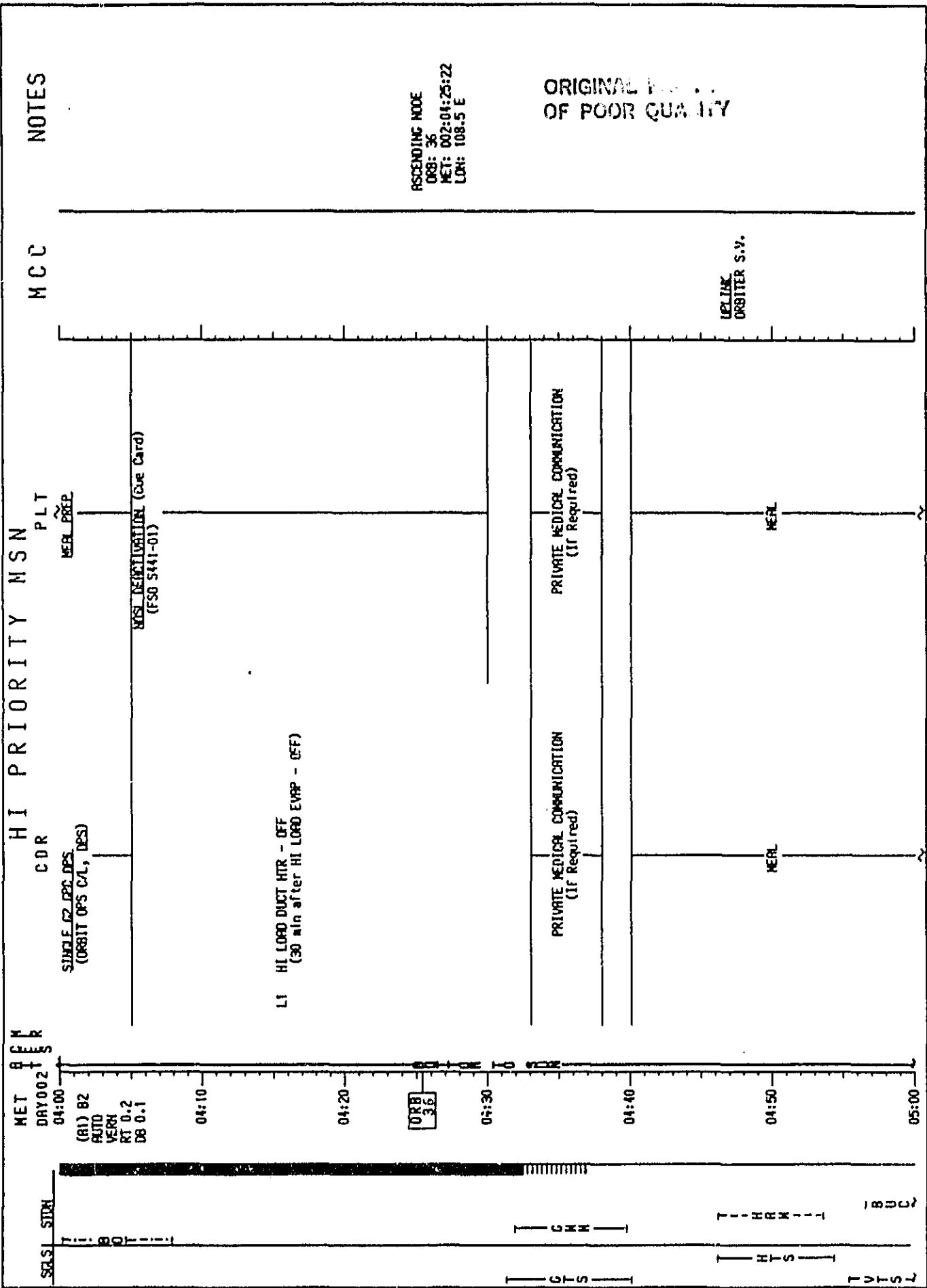
PERFORM STEP 2 (PERFORM TRANSLATIONS)  
Limit THC -X sec  
(03:50) -X TRANS (30 sec)

CDR /DFT RCDRS MB MSN - STBY (tb-bp)

CDR /DFT RCDRS MB MSN - STBY (tb-bp)  
GAP: B/AUTO/VERN  
PRIMARY RJD DRIVER (eight) - OFF  
CDR /DFT RCDRS PCN - W1 SAMP

5/14/82 SIS/FR

5-42

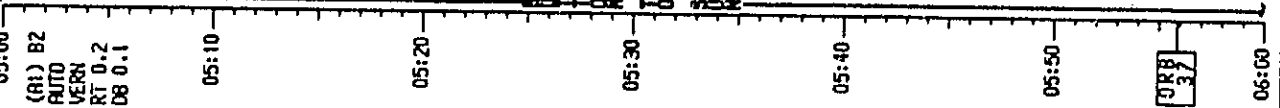


5/14/82 SIS4/FIN

NET 0000  
DAY 002

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

SQSL STDN



0000  
37

HI PRIORITY MSN  
COR PLT

MEPL

MEPL

CEBIA STOM  
(ORBIT OPS C/L, CREEH SYS)

CEBIA STOM  
(ORBIT OPS C/L, CREEH SYS)

NOTES

MCC

ORIGINAL PAGE 10  
OF POOR QUALITY

ASCENDING NODE  
ORB: 37  
MET: 002:05:55:50  
LON: 85.3 E

5/14/82 SISL/PLN

5-14

NET 8 CM  
DAY002

SCAL STON

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

06:10

06:20

06:30

06:40

06:50

A1 (B2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

07:00

HI PRIORITY MSN

CDR

PLT

COBIN STON  
(ORBIT OPS C/L, CREW SYSL)

COBIN STON  
(ORBIT OPS C/L, CREW SYSL)

MCC

NOTES

ORIGINAL  
OF POU

HYD THERM CONTROLLING THERMISTE  
(ORBIT OPS C/L, REU/HD)

AUTO HMR TO IMAGIGN ATT  
HMR OPTION: R \* 261.0  
P \* 349.6  
Y \* 39.0  
DAP: R/AUTO/VERN  
(00:50) Initiate HMR

Stars 43 & 28  
available from  
2/06:57 to 2/07:36

HI PRIORITY MSN PLT

CDR ~

NOTES

INITIAL ALIGNMENT - 5 TRK  
(ORBIT OPS C/L, GNC)  
STRK ID: -Y: 43, RGRSLRHCIE  
-Z: 28, AL NA'IR  
RNC DIF: 85.0  
REPORT: INITIAL ALIGN RESULTS  
0.4 DEL/SEC PTD XPR - INITIATE  
(FTO 412-01)  
MNR OPTION: R: 165.8  
P: 232.6  
Y: 58.3  
DAP: A/AUTO/VERN  
(07:10) Initiate MNR

When MNR to PTC ATT complete,  
CHANGE DAP A:  
ROT DISC RATE VERN - 0.4 /SEC  
CHANGE DAP B:  
DB ATT VERN - 1.0  
BODY VECT +4  
(07:30) Initiate ROT

ERS/GNSS TRACKER STANDBY (PTO 412-86)  
(ORBIT OPS C/L, R/S FTO's)  
Perform Step 3 (RECONFIG TO NOMINAL)

SUPPLY WATER DUMP  
(ORBIT OPS C/L, ECLS)  
Dump TRK A & B  
Dump to:  
QTY A = QTY B = (Due Card)  
ELECT CELL PURGE - AUTO (Due Card)

ORBIT TV STOW  
MF57E/ Stow both cameras  
MF57C

07:00  
A1 (B2)  
AUTO  
VERN  
RT 0.2  
DB 1.0

07:10

07:20  
A2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

07:30

07:40

07:50

08:00

INITIAL ALIGN PHO

TRK ID 1 RNC ERR 3

A X ( ) ( ) ( )

A Y ( ) ( ) ( )

A Z ( ) ( ) ( )

EXECUTION TIME: / - - -

RPT: IM: ALIGN RESULTS

LEADIE  
H2O SPLY DUMP  
QTY TR A & B

NOT ONLY  
COORD CUM/EDR  
LIMITS CLEANUP  
FOR CREW  
SLEEP

UPLINK  
SPC LOGO -  
1ST DOWN  
ALERT  
CNO  
RDDR SLEEP  
CONFIC

5/14/82 SIS/RTN

ORIGINAL PAGE 10  
OF POOR QUALITY

ASCENDING NODE  
ORB: 38  
MET: 002:07:26:18  
LON: 62.2 E



NOTES

MCC

HI PRIORITY MSN  
CDR PLT

MET 8 C/M  
DAY 002

08:00  
R2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

FIRE/SMOKE DETENT/SUPPRESS TEST  
(ORBIT OPS C/L, EPS)

C02 PASSENGER REPLACEMENT  
(5 into 8)

ANNUNCIATOR, C/L LAB TEST  
(ORBIT OPS C/L, EPS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

ORIGINAL PAGE 10  
OF POOR QUALITY

TPR  
BLOCK DATA  
WEATHER PRO  
8-10/40-43

C3 JDFI RECORDS PCM - LO SRMP

ASCENDING NODE  
ORB: 39  
MET: 002:08:56:46  
LON: 39.0 E

5711782 STS471H

5-17

HET  
09:00  
09:10  
09:20  
09:30  
09:40  
09:50  
10:00

CD-R  
HI PRIORITY MSN  
PLT

NOTES

MCC

ORIGINAL PAGE IS  
OF POOR QUALITY

UPLINK  
ORBITER S.V.

SLEEP

SLEEP

5-48

5714782 SIS071R



ORIGINAL PAGE IS  
OF POOR QUALITY

5/14/82 STS/FH

NOTES

MCC

HI PRIORITY MSN  
PLT  
CDR

NET  
DRY0021

SCSI SUM

15:00  
R2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

15:10

15:20

15:30

15:40

15:50

16:00

SLEEP

SLEEP

PLC X 6 DB

OKK M R D I

5-50

NET 8 CM  
DRY002

SLSI STDN

RZ (BI)  
AUTO  
VERN  
RT 0.4  
DB 1.0

16:10

16:20

16:30

16:40

16:50

17:00

M  
DRD  
T  
M  
R  
X  
I

HI PRIORITY MSN

CDR

PLT

SLEEP

SLEEP

MCC

NOTES

ASCENDING MODE  
DRB: 44  
MET: 002:16:29:04  
LON: 76.6 N

ORIGINAL PAGE 13  
OF POOR QUALITY

CDR  
RDR  
RDR  
CONFIC  
UPLINK  
SPC LORO-  
CLEAR COM  
ALERT

# HI PRIORITY MSN

MET 0002  
DRY002

CDR

PLT

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

Shave electrode sites, if reqd

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

NOTES

MCC

UPDATE  
H2O SPLY DUMP  
QTY TK R & B  
IMMENSE DEEM  
SM CRPT -  
REQD/NOT REQD

ORIGINAL PAGE 19  
OF POOR QUALITY

ASCENDING NODE  
ORB: 45  
MET: 002:17:59:32  
LOR: 59.8 M

5-52

5/14/82 SISV/TN

SQSI STDN

17:00  
R2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

17:10

17:20

17:30

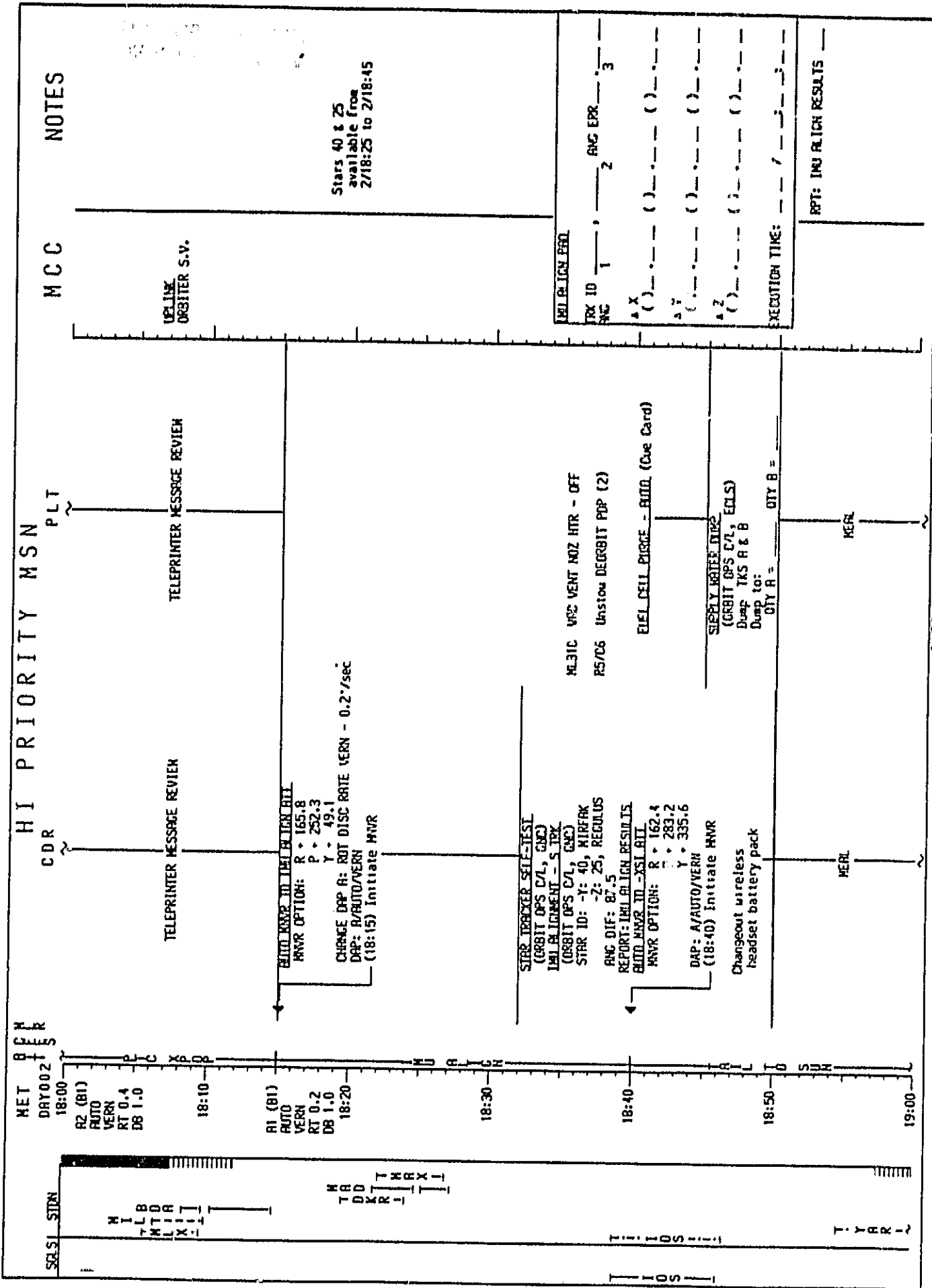
17:40

17:50

18:00

ORB  
45

ORR 1:1 11



NET 0800  
DRY00215

HI PRIORITY MSN

PET

CDR

NOTES

MCC

ORIGINAL PAGE 13  
OF POOR QUALITY

ASCENDING NODE  
ORB: 46  
MET: 002:19:30:00  
LON: 122.9 W

TIER  
BLOCK DATA  
WEATHER PRO  
B- 12/48-51

LEPRAE  
COT TOWER  
SETUP PRO

R11 OEX PAR - ON

Copy: COT TOWER SETUP PRO UPGRADE  
in DEORBII PREP, 3-7

[Go to DEORBII PREP]

CLERK/STORAGE (Cue Card)  
Steps 1-4

HERL

HERL

ORB  
46

5/11/78Z 515071N

5-54



## ONE-DAY EXTENSION

The STS-4 Extension Timeline is designed to follow a nominal flight up to the decision point for the 24 hour extension. This GO/NO GO decision point occurs at MET 6/00:25, prior to entry-related activities for the nominal flight.

Also, this timeline may be used after the D/O PREP BACKOUT has been executed on FD 8.

### 24 HOUR EXTENSION CASE:

- o Execute detailed timeline pages from 6/00:00 to Deorbit Prep on FD 9
- o A period of time with no scheduled activities is provided immediately following the GO/NO GO to allow preparations for the extension of the flight.

### AFTER DEORBIT PREP BACKOUT CASE:

Begin timeline at 7/00:30 with the following changes:

- o CDR - MCC will modify PTC to -ZLV as required (5-83); omit CABIN TV STOW at 7/04:15 MET
- o PLT - Omit all activities between MET 7/02:10 and 7/04:20 (i.e., P/L DEACT, CABIN STOW, CO<sub>2</sub> ABSORBER REPLACEMENT)

ONE-DAY  
EXTENSION

# ONE-DAY EXTENSION

GMT (D:H:M)		MET (D:H:M)		COT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE	
184:15:00/ 185:03:00		006:00:00/ 006:12:00		184:10:00/ 184:22:00		7/ 184 COT		16.3		0		JULY 3, 1982		STS-4		FINAL		05/14/82	
GMT : 184 15		16		17		18		19		20		21		22		23		24	
FD 7		1		2		3		4		5		6		7		8		9	
MET : 006 0		1		2		3		4		5		6		7		8		9	
CDR				MERL				MERL		PRE SLEEP ACT		SLEEP							
PLT				MERL				MERL		PRE SLEEP ACT		SLEEP							
DAY/NIGHT																			
ORBIT		96		97		98		99		100		101		102		103		104	
EARTH TRACE K/SAR																			
GSTON COVERAGE		YAR - HLY - ACH - BOT - CDS		- HLY - ACH - BOT - CDS		- HLY - ACH - BOT - CDS		- HLY - ACH - BOT - CDS		- HLY - ACH - BOT - CDS		- HLY - ACH - BOT - CDS		- HLY - ACH - BOT - CDS		- HLY - ACH - BOT - CDS		- HLY - ACH - BOT - CDS	
SCLS COVERAGE		- GTS - HTS - VTS		- GTS - HTS - VTS		- GTS - HTS - VTS		- GTS - HTS - VTS		- GTS - HTS - VTS		- GTS - HTS - VTS		- GTS - HTS - VTS		- GTS - HTS - VTS		- GTS - HTS - VTS	
Q/S DEORB KSC EDM																			
ATTITUDE																			
MANEUVERS																			
TVZTR																			
CPES																			
MLR																			
NOTES:		<p>• FD 8 CO/NO CO</p> <p>• CHARGEOUT</p> <p>• FTO 412-01 ATT HOLD THERMAL RESPONSE</p> <p>• FTO 412-06,08 RCS THERMAL SORBACK, TWO</p> <p>FINO &amp; ONE L PROCS ENGINE</p>																	

ORIGINAL PAGE 11  
OF POOR QUALITY

05/14/82 SIS/AM

5-56

CNT (D:H:M)		MET (D:H:M)		COT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE			
185:03:00/ 185:19:00		006:12:00/ 007:00:00		184:22:00/ 185:10:00		7/ 184 COT		18.8		0		JULY 4, 1982		STS-4		FINAL		05/14/82			
CNT : 185 3		4		6		8		9		10		11		12		13		14		15	
FD 7		13		14		17		18		19		20		21		22		23		0	
MET : 006 12		13		14		17		18		19		20		21		22		23		0	
COR	SLEEP	POST SLEEP ACT	MEAL	PLBO CYCLE TEST	MEAL	TV SETUP	MEAL	TV ACT	MEAL	EQUIP PREP	EVA PREP	EMU/ AIR/OX EVL	EMU LON DRT REPLACE	POST EVA PREP							
PLT	SLEEP	POST SLEEP ACT	MEAL	PLBO CYCLE TEST	MEAL	TV SETUP	MEAL	TV ACT	MEAL	EQUIP PREP	EVA PREP	EMU/ AIR/OX EVL	EMU LON DRT REPLACE	POST EVA PREP							
DAY/NIGHT	104	105	106	107	108	109	110	111	112												
MOD UP/DOWN																					
EARTH TRACE W/SAA																					
CSTDH COVERAGE	-DKR	-DKR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	
SGLS COVERAGE	-DKR	-DKR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	-YAR	
OPS DEORB KSC EDM	16:27	18:03	19:31	21:06	22:42																
ATTITUDE	BOTTOM TO SUN																				
MANEUVERS																					
TV/VTR																					
CFES																					
MLR																					
NOTES:	<p>0 FTO 451-03 PLBO COLD CASE PERFORMANCE</p> <p>0 FTO 412-01 ATT HOLD THERMAL RESPONSE</p> <p>0 STAIR SELF TEST</p> <p>0 FTO 471-01 S-BRO &amp; UFF ATT PATTERNS</p>																				

ORIGINAL PAGE NO  
OF POOR QUALITY

CMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		(D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB, DATE
185115:00/ 186103:00		007100:00/ 007112:00		185110:00/ 185122:00				/ 185 DOY	20.7	0	JULY 4, 1982	STS-4	FINAL	05/14/82
<p>GMT : 185 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 97</p>														

[illegible]

NET 8 PM  
DRY006

CDR STS-4 DETAILED

PLT

NOTES

MCC

SOLE STOW

00:00 00:10 00:20 00:30 00:40 00:50 01:00

A4 (B2)

AUTO

NORR

RT 0.2

D8 5.0

DRB 97

80 TOW TO SHIP

FD 8 CO/NO CO

INDECK CREW  
FD 8 CO /NO CO

ASCENDING NODE  
DRB: 97  
MET: 006:00:24:04  
LON: 136.6 E

ORIGINAL...  
OF POOR...

5-60

05/14/82 STS/PLN

# STS-4 DETAILED

MET  
 DRY006  
 01:00

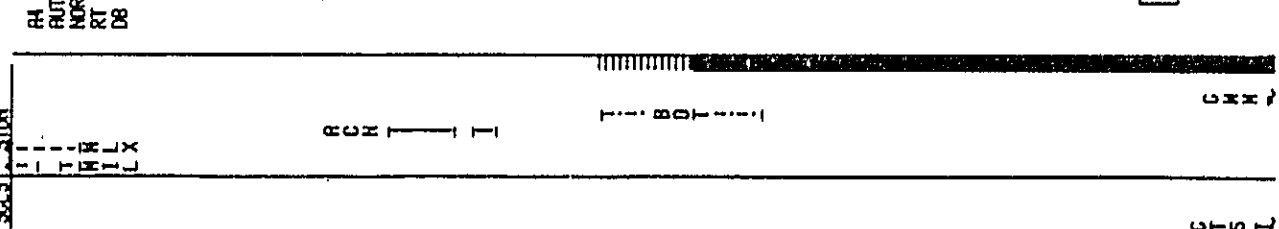
PLT

CDR

NOTES

MCC

01:00 01:10 01:20 01:30 01:40 01:50 02:00



ASCENDING MODE  
 D88: 98  
 MET: 005:01:54:32  
 LON: 113.5 E

STS-4 DETAILED

CDR

PLT

NOTES

MCC

ORIGINAL TABLE  
OF POOR QUALITY

TPR  
BLOCK DATA  
WEATHER PRO  
B-25/101-104

NERL PREP (Cue Card)  
Prepare DAT 7, NERL C

NET PER  
DRY006

02:00  
R4 (B2)  
R400  
RT 0.2  
D8 5.0  
02:10  
02:20  
02:30  
02:40  
02:50  
03:00

ST S

C H M

H T S

G G  
T X S  
B T T  
D U I



# STS-4 DETAILED

CDR

PLT

NOTES

MCC

MET 0006  
DAY 006

03:00  
R4 (B2)  
AUTO  
NORM  
RT 0.2  
DB 5.0

03:10

03:20

03:30

03:40

03:50

04:00

SELS STON

T: 10 S

T: 10 S

T: 10 S

T: 10 S

SUPPLY WATER DUMP  
(ORBIT OPS C/L, ECLS)  
Dump TKS A & B  
Dump to:  
QTY A = QTY B =

LEDATE  
H2O SPLY DUMP  
QTY TK A & B

ASCENDING NODE  
ORB: 99  
MET: 006:03:25:00  
LON: 90.3 E

ORIGINAL PRINT  
OF POOR QUALITY

MEEL

MEEL

5-63

05/14/82 STS/IN

NET 8 PM  
DAY 006

# STS-4 DETAILED

PLT

CDR

MCC

NOTES

SLIST STIM

04:00  
R4 (B2)  
AUTO  
NOCH  
RT 0.2  
DB 5.0

04:10

04:20

04:30

04:40

04:50

05:00

BOTTOM TO SUN

SUN

ENGINE'S THERMAL SENSORS  
(2 END/1 RET RCS ENG - FTO 412-06.08)  
(ORBIT OPS C/L, RCS FIDLS)  
Perform Step 3 (RECONFIG TO NOMINAL)

BUILD MNR TO INIT ALIGN ATT  
MNR OPTION: R +261.0  
P +345.6  
Y +39.0  
DAP: B/AUTO/VERN  
(04:32) Initiate MNR

INITIAL ALIGNMENT - S TRK  
(ORBIT OPS C/L, GNC)  
STAR ID: -Y: 43, KASALHAGUE  
-Z: 28, AL NATIR  
RNG DIF: 85.0

BUILD MNR TO 751 ATT (FTO 412-01)  
MNR OPTION: R +321.2  
P +224.0  
Y +51.4  
DAP: B/AUTO/VERN  
(04:52) Initiate MNR

ORIGINAL PAGE NO.  
OF POOR QUALITY

Stars 28 & 43  
available from  
6/04:33 to 6/05:13

TIME FROM PLT

TRK ID	1	2	3
RNG			
X	( )	( )	( )
Y	( )	( )	( )
Z	( )	( )	( )

EXECUTION TIME: / /

ASCENDING NODE  
DDB: 100  
MET: 006:04:55:28  
LON: 67.2 E

NOTES

MCC

PLT

STS-4 DETAILED

CDR

MET  
DAY006  
05:00

(H1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

AUTO MANR TO 751 RTT

SINGLE B2 OPT OPS  
(ORBIT OPS C/L, DES)

UPLINK  
ORBITER S.V.

CO2 RESORBER REPLACEMENT  
(9 Into R)

ELE CELL PURGE - AUTO (Due Card)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

ORIGINAL PAGE  
OF POOR QUALITY

# STS-4 DETAILED

MET 06:00  
DAY 006

CDR

PLT

NOTES

MCC

MCC ONLY  
COORD CDR/FDR  
LIMITS CLEARUP  
FOR CREW SLEEP

ASCENDING NODE  
ORB: 101  
MET: 006:56:25:56  
LON: 41.0 E

ORIGINAL TIME  
OF POD: 006:56:25:56

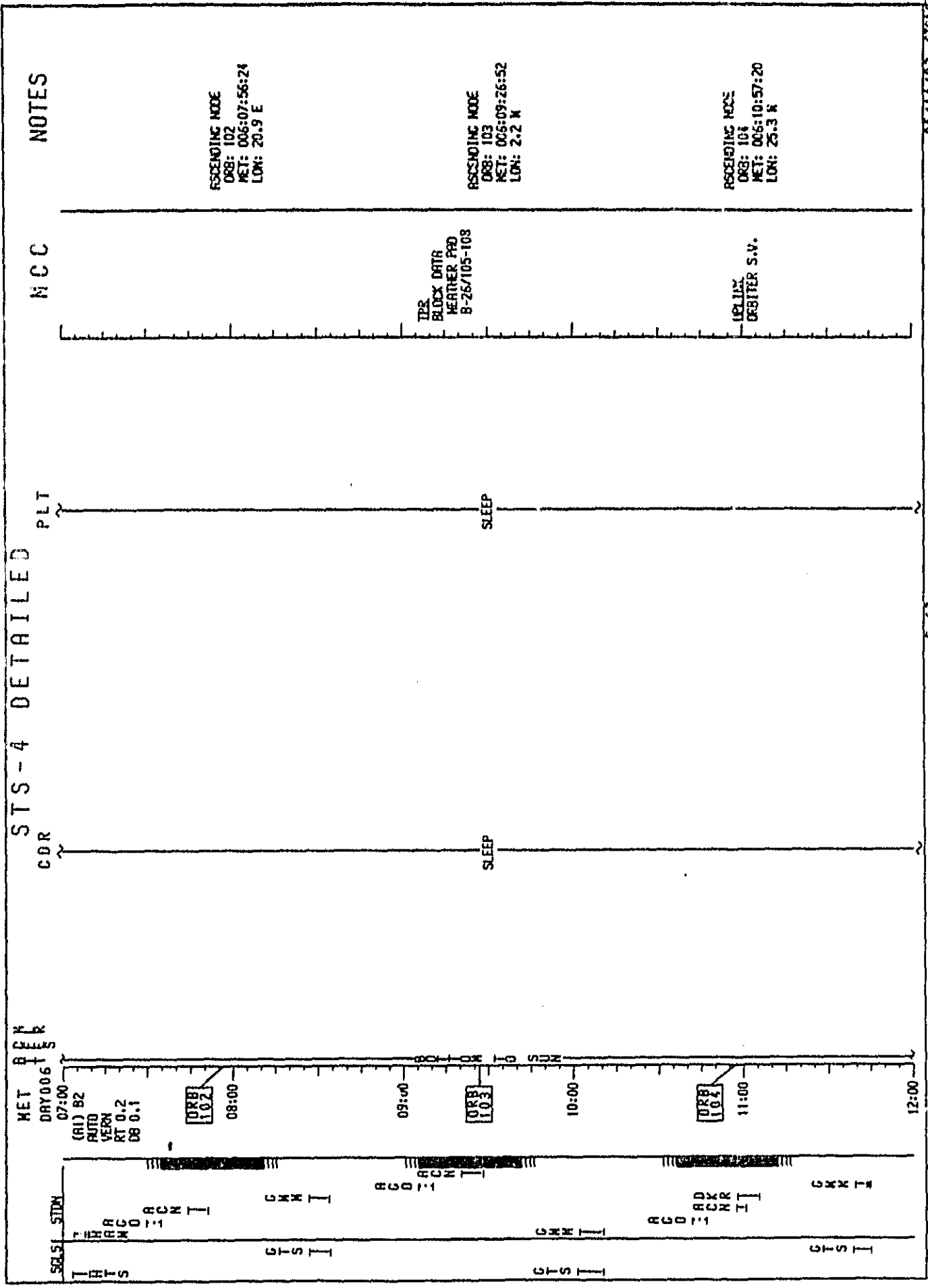
PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

SLEEP

SLEEP

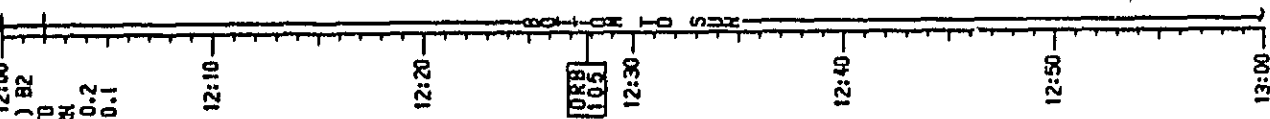
DELINK  
SPC LDRD -  
1ST COM  
ALERT  
DELINK  
SPC LDRD -  
105 COM  
CEL  
RDR SLEEP  
CONFIC



# STS-4 DETAILED

MET  
DRY006  
12:00  
(R1) B2  
AUTO  
VERA  
RT 0.2  
DB 0.1

SCS1 STDN



CDR

SLEEP

PLT

SLEEP

NOTES

MCC

ASCENDING MODE  
DB: 10.5  
MET: 006:12:27:48  
LON: 48.5 N

ORIGINAL PICTURE  
OF POOR QUALITY

# STS-4 DETAILED

NET  
DAY 006

SEL STIM

13:00  
(H1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

CDR

SLEEP

PLT

SLEEP

NOTES

MCC

OF FOUR GEMINIS

ASCENDING NODE  
DB: 1CS  
MET: 006:13:58:15  
LOC: 71.6 W

DRB  
1.06

14:00

# STS-4 DETAILED

MET 8:00  
DAY 006

SCSI STDM

(R1) 82  
AUTO  
VERN  
RT 0.2  
DB 0.1

OH  
KARD  
T MAX

YARRTT

PLT

CDR

SLEEP

SLEEP

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

NOTES

MCC

101 LINK  
SPC LOAD -  
CLEAR DOWN  
ALERT  
CMD  
RCOR PWAKE  
CONFIC

INEROM CREW  
SH CXT -  
REDO/NOT REDO

ORIGINAL PAGE 3  
OF POOR QUALITY

05/14/82 SYS/FIN

5-70



# STS-4 DETAILED

MET  
DAY 006  
15:00

SOLSI STON

NOTES

MCC

PLT

CDR

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

POST SLEEP ACTIVITY

POST SLEEP ACTIVITY

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

UPDATE  
H2O SPAY DUMP  
QTY TN A & B

SUPPLY ENTER JUNE  
(ORBIT OPS C/L, ECLS)  
Dump TKS A & B  
Dump to:  
QTY A = QTY B =

FIELD CELL PURGE - RIND (One Card)

Chargeout wireless  
headset battery pack

UPDATE  
DIGITER S.V.

NEAL

NEAL

ASCENDING NODE  
ORB: 107  
MET: 006:15:28:43  
LOH: 94.8 N

# STS-4 DETAILED

MET 0800  
DAY 006

SELSI STIM

(R1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

CDR

PLT

NOTES

MCC

ORIGINAL PAGE 19  
OF POOR QUALITY

16:00

16:10

16:20

16:30

16:40

16:50

17:00

MEAL

MEAL

PLBD PERFORMANCE  
(PLBD COLD CASE - FTO 451-03)  
(ORBIT OPS C/L, PLBD FTO's)  
Theodolite sightings  
during PLBD operations

PLBD PERFORMANCE  
(PLBD COLD CASE - FTO 451-03)  
(ORBIT OPS C/L, PLBD FTO's)  
Theodolite sightings  
during PLBD operations

ORR  
108

ASCENDING NODE  
ORB: 108

MET: 006:16:59:11

LOC: 117.9 N

05/14/82 SIS/ELN

5-72

# STS-4 DETAILED

NET 8 00 AM  
DAY 006

(A1) B2  
AUTO  
VERA  
RT 0.2  
DS 0.1

SQSL STDN

TTTT  
MIX  
LIIII  
B O A

WAK  
DAX  
KRI  
I =

IIIIHOSIIII

YAR I L

NOTES

MCC

TPR  
BLCK DATA  
WEATHER PRO  
B-27/109-112

PLT

PLBD PERFORMANCE  
(FTO 451-03)

CDR

PLBD PERFORMANCE  
(FTO 451-03)

ORIGINAL PACKING  
OF POOR QUALITY

05/14/82 SISAF IN

5-73

# STS-4 DETAILED

NET  
DAY 006  
18:00

SELS  
STON

CDR

PLT

MCC

NOTES

(A1) B2  
AUTO  
VERN  
RT 0.2  
DB 0.1

PLBO PERFORMANCE  
(FTO 451-03)

PLBO PERFORMANCE  
(FTO 451-03)

Stars 41 & 34  
available from  
6/16:09 to 6/16:58

AUTO MNR TO PTC ATT

MNR OPTION: R = 252.9  
P = 252.5  
CHANGE DAP B: DB ATT VERN -1.0  
DAP: A/AUTO/VERN  
(18:12) Initiate MNR

A1 (B1)  
AUTO  
VERN  
RT 0.2  
DB 1.0

STAR TRACKER SELF-TEST  
(ORBIT OPS C/L, GNC)  
ALIGNMENT - S TRK  
(ORBIT OPS C/L, GNC)  
STAR ID: -Y: 41, DENEBOUL  
-Z: 34, HIPPARCIOUS  
RNG DIF: 88.6

EXERCISE

S TRK THRESHOLD VERIFICATION (FTO 473-02)  
ORBIT OPS C/L, GNC  
STAR ID: -Z: 34, HIPPARCIOUS -Y: 41, DENEBOUL  
THOLD - 3(2,1,0)  
7.5 TRK THOLD -Z, -Y, -O  
0.4 DEG/SEC PTC, XPRP - INITIATE  
(FTO 412-01)  
MNR OPTION: R = 289.4  
P = 226.8  
Y = 52.5  
DAP: A/AUTO/VERN  
(18:42) Initiate MNR

When MNR to PTC ATT complete,  
CHANGE DAP A:  
ROT DISC RATE VERN - 0.4 7/SEC  
BODY VECT +4  
Initiate ROT

A2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

CORIN TV SETUP (TV02-EVR DEMO)  
(PHOTO/TV C/L, IV SCENES)

TIME/ID

TRK ID	1	RNG	ERR	3
A X	( )	( )	( )	( )
A Y	( )	( )	( )	( )
A Z	( )	( )	( )	( )

EXECUTION TIME: / /

SENDING MODE  
OR8: 109  
NET: 08:18:29:39  
LON: 141.1 W

S TRK THRESHOLD PRO  
S TRK STAR ID  
RNG THOLD  
NET  
(D:HH:MM) : : :

S TRK THRESHOLD PAD  
S TRK STAR ID  
RNG THOLD  
NET  
ID:HH:MM : : :

ORIGINAL PAGE 14  
OF FOUR QUALITY

05/14/82 SIS/FEIN

5-74



# STS-4 DETAILED

MET 0006  
DAY 006

PLT

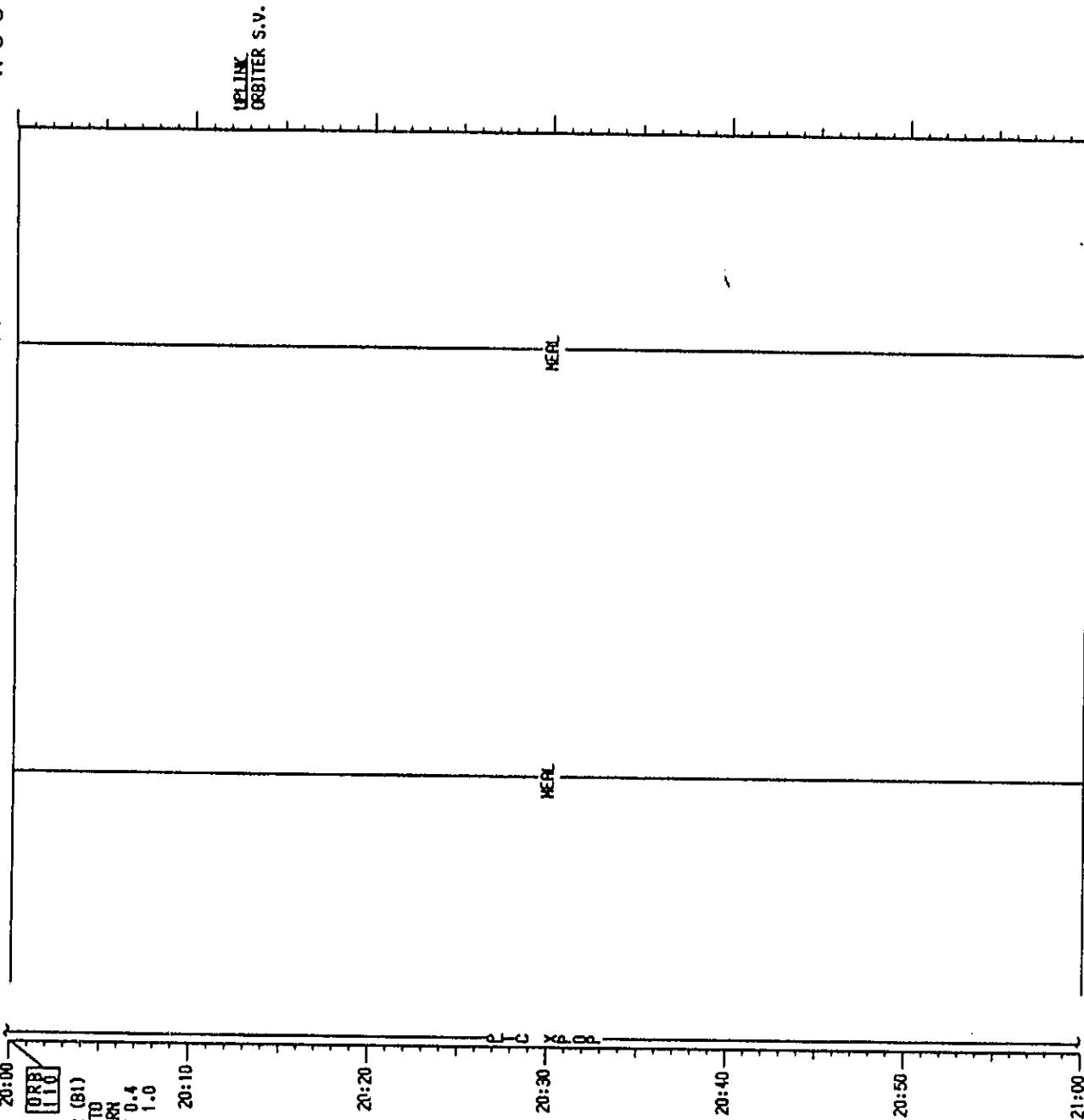
CDR

MCC

NOTES

ASCENDING NODE  
ORB: 110  
MET: 006:20:00:06  
LON: 164.2 N

ORIGINAL PAGE 19  
OF POOR QUALITY



# STS-4 DETAILED

MET  
DAY 006  
21:00

R2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0

CDR

EMI DEMO  
(EVA C/L, EQUIP PREP)

PLT

16MM DEMO RCT (16MM/12-EVA DEMO)  
(PHOTO/TV C/L, 16MM SCENES)

NOTES

MCC

EVA SUPPORT

EVA PREP  
(EVA C/L, AIRLOCK/DECK PREP)

ORBIT OPS C/L, DPS

S-BAND ANTENNA PATTERN  
(FTO 471-01)  
(ORBIT OPS C/L, COMM FTD)  
Configure for QDS & MIL  
ROS: 6/21:47  
LOS: 6/22:03

ASCENDING NODE  
ORB: 111  
MET: 006:21:30:34  
LON: 172.6 E

ORIGINAL PAGE 13  
OF POOR QUALITY

# STS-4 DETAILED

MET  
DAY 006

NOTES

MCC

PLT

CDR

STS-4

22:00

A3 (B1)

AUTO

VERN

RT 0.4

DB 1.0

22:10

A2 (B1)

AUTO

VERN

RT 0.4

DB 1.0

22:20

22:30

22:40

22:50

23:00

S-BAND ANTENNA PATTERN

SINGLE ZEPPELINS  
(ORBIT OPS C/L, DES)

EVA PREP

EMERGENCY EVA  
(EVA C/L, EVA PREP CIE, DES)

EVA SUPPORT

ORIGINAL PAGE 19  
OF POOR QUALITY

5-78

05/11/82 515171H



# STS-4 DETAILED

NET 8 PM  
DRY006

CDR

EMU LION CARTRIDGE/PLSS BATTERY  
REPLACEMENT  
(EVA C/L, EMU RAINI/RECHARGE)

ORB 112  
R2 (BT)  
RUTO  
VERA  
RT 0.4  
DB 1.0

SLASL STON

CT S I  
G W N I  
H T S  
V T S  
G D S  
T T C  
B U D X  
T T M I  
N B L D X A  
A C N

PLT

MCC

NOTES

TPR  
BLOCK DTR  
HEATHER PRO  
B-28/113-116

ASCENDING NODE  
ORB: 112  
MET: 006:23:01:02  
LON: 149.4 E

EVA SUPPORT

POST EVA ENTRY PREP  
(EVA C/L, POST EVA ENTRY PREP)

TUOVER DEACT (TUOVER/DEACT Due Card)

1688 DEACT DEACT (1688/17-EVA DEACT)  
(PHOTO/TV C/L, 1688 STONES)

ORIGINAL PAGE 11  
OF POOR QUALITY

007  
00:00

# STS-4 DETAILED

NET 8 PM  
DRY007

CDR

PLT

NOTES

MDSL DEACTIVATION (Cue Card)  
(FSD 5441-01)

MEBL\_PREP (Cue Card)

ORIGINAL PAGE 10  
OF POOR QUALITY

HOUSEKEEPING

ASCENDING MODE  
DBS: 113  
MET: 007:00:31:29  
LON: 126.3 E

UPLINK  
DBBITER S.V.

HOUSEKEEPING

5-80

05/14/82 STS/PLN

SELSI STON

--- BOT ---

--- STS ---

--- HTS ---

--- HRRN ---  
BUGG  
CDD  
TIT

--- TIT ---

--- HTS ---

--- HTS ---

--- HRRN ---

--- HTS ---

--- HTS ---

--- HTS ---

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--- HTS ---

--- HTS ---

--- HTS ---

# STS-4 DETAILED

NOTES

MCC

PLT

CDR

MET  
DAY 007  
01:00

R2 (81)  
AUTO  
VERN  
RT 0.4  
DS 1.0

VT S-I  
SLSI-SPN  
T T T  
B U I T  
U G G  
T D D  
X S  
M N  
L L  
L X  
T T  
T T

RCN

TIME BOT

ORIGINAL PAGE 151  
OF POOR QUALITY

05/14/82 SLS/PLN

5-81

MET PCM  
DAY 00715

STS-4 DETAILED  
CDR

PLT

MCC

NOTES

ORBIT STIM  
(ORBIT OPS C/L, CSEM SYSTEMS)

ORR  
114

R2 (BT)  
AUTO  
VERN  
RT 0.4  
DB 1.0

02:10

02:20

02:30

02:40

02:50

03:00

CTSS

HTS

VTS

PARADO REACTIVATION  
(OPERATIONS C/L, IIR E)

POST OPERATIONS DOCUMENTATION  
(OPERATIONS C/L, IIR P70/11 R P70/15)

PARADO DENSITY PREPARATION  
(OPERATIONS C/L, IIR E)

ORBIT STIM  
(ORBIT OPS C/L, CSEM SYSTEMS)

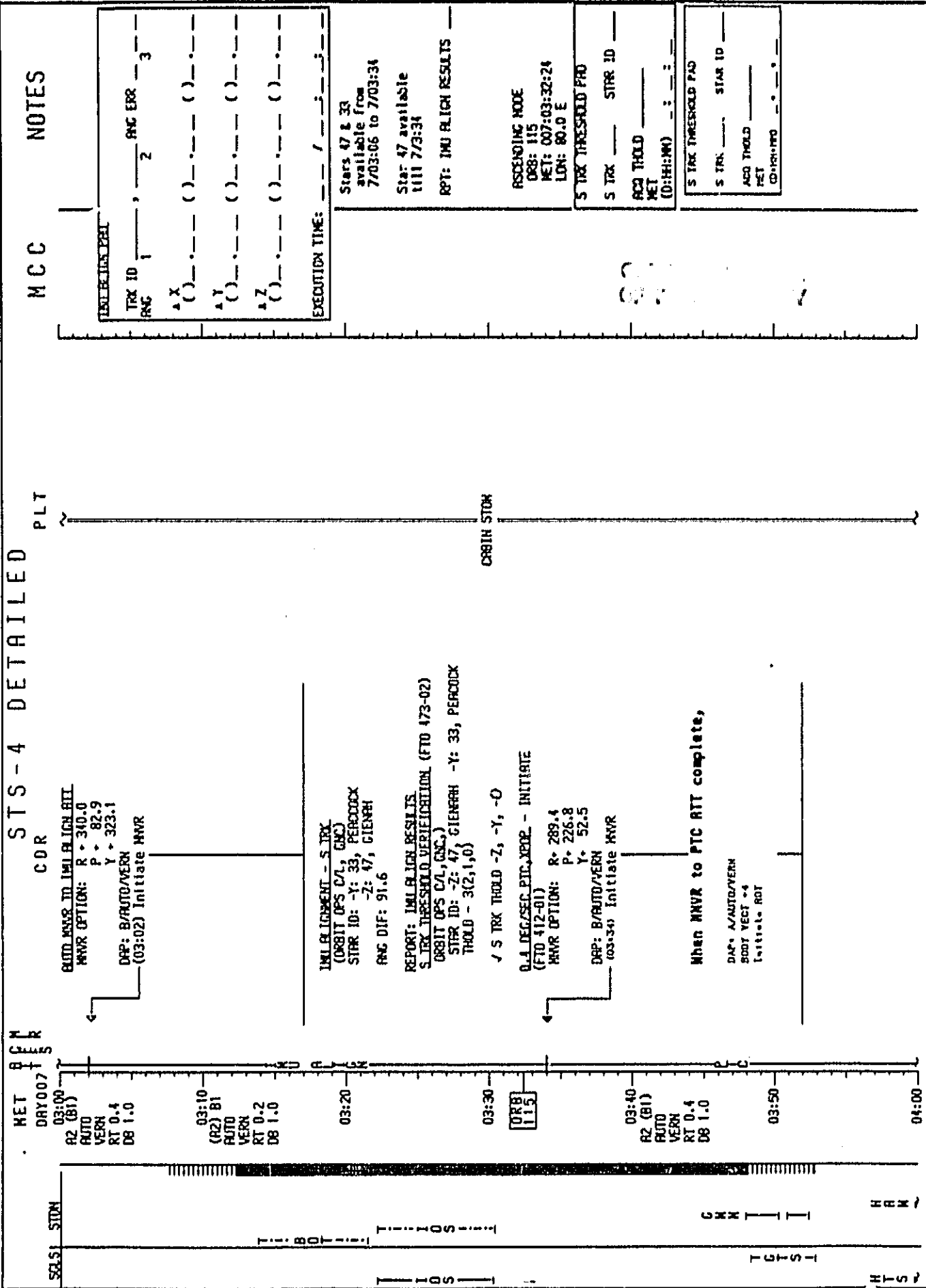
ASCENDING NODE  
ORB: 114  
MET: 007:02:01:57  
LON: 103.1 E

ORIGINAL PAGE 18  
OF POOR QUALITY

5-82

05714782 SYS/FIN

# STS-4 DETAILED





# STS-4 DETAILED

NET BCM  
DAY007

SQLS STON

05:00

ORR 116  
R2 (BT)  
AUTO  
VERN  
RT 0.4  
DB 1.0

05:10

05:20

05:30

05:40

05:50

06:00

PLT

CDR

MCC

NOTES

ASCENDING NODE  
DOB: 116  
MET: 007:05:02:52  
LON: 55.8 E

PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

SLEEP

SLEEP

UPLINK  
ORBITER S.V.  
TPR  
BLOCK DATA  
WEATHER PRO  
B-29/117-120  
CAL  
RCDR SLEEP  
CONFIC  
UPLINK  
SPC LOAD -  
1ST COMM  
ALERT

ORIGINAL PAGE 12  
OF FOUR QUALITY

# STS-4 DETAILED

MET CDR

DAY 007

06:00

B2 (81)

RUTO

VERN

RT 0.4

DB 1.0

SLEEP

ORB 117

06:40

06:50

07:00

SCS1 STDN

.....0000.....

ACM F I

IOS T I I I I

IOS I

5-15

PLT

SLEEP

MCC

NOTES

ORIGINAL PAGE 13  
OF POOR QUALITY

ASCENDING NODE  
ORB: 117  
MET: 007:06:33:19  
LON: 33.7 E

5-86

05/14/82 STS/FIN

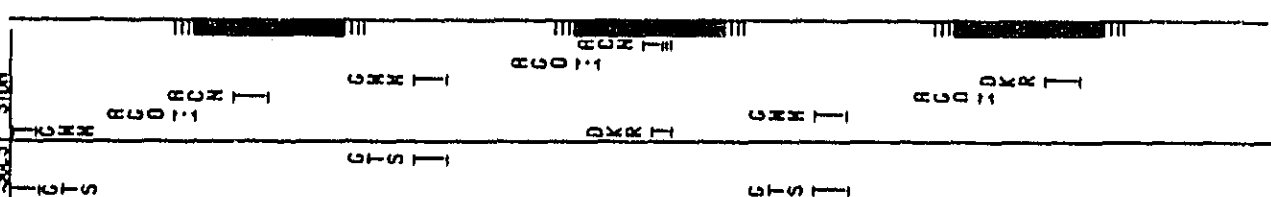


# STS-4 DETAILED

MET  
DRY007

SLSI STON

07:00  
R2 (B1)  
AUTO  
VERN  
RT 0.4  
DB 1.0



CDR

SLEEP

PLT

SLEEP

NOTES

ASCENDING NODE  
ORB: 118  
MET: 007:08:03:47  
LON: 10.6 E

ASCENDING NODE  
ORB: 119  
MET: 007:09:34:14  
LON: 12.5 W

ASCENDING NODE  
ORB: 120  
MET: 007:11:04:41  
LON: 35.6 W

MCC

UPLINK  
ORBITER S.V.

TPR  
BLOCK DATA  
WEATHER PRO  
B-30/121-124

ORIGINAL PAGE 13  
OF POOR QUALITY

MET 0800  
DAY 007

R2 (81)  
AUTO  
VERM  
RT 0.4  
D8 1.0

ORB  
121

STS-4 DETAILED

SELSI STDN

CDR

PLT

MCC

NOTES

ORIGINAL PAGE 12  
OF POOR QUALITY

ASCENDING NODE  
ORB: 121  
MET: 007:12:35:08  
LON: 58.8 W

SLEEP

SLEEP

5-88

05/14/82 SIS/PH

# STS-4 DETAILED

MET  
ACM  
DRY007  
13:00

SQSL STDN

RZ (BI)  
AUTO  
VERN  
RT 0.4  
DB 1.0

CDR

SLEEP

PLT

SLEEP

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

Shave electrode sites, if reqd

MCC

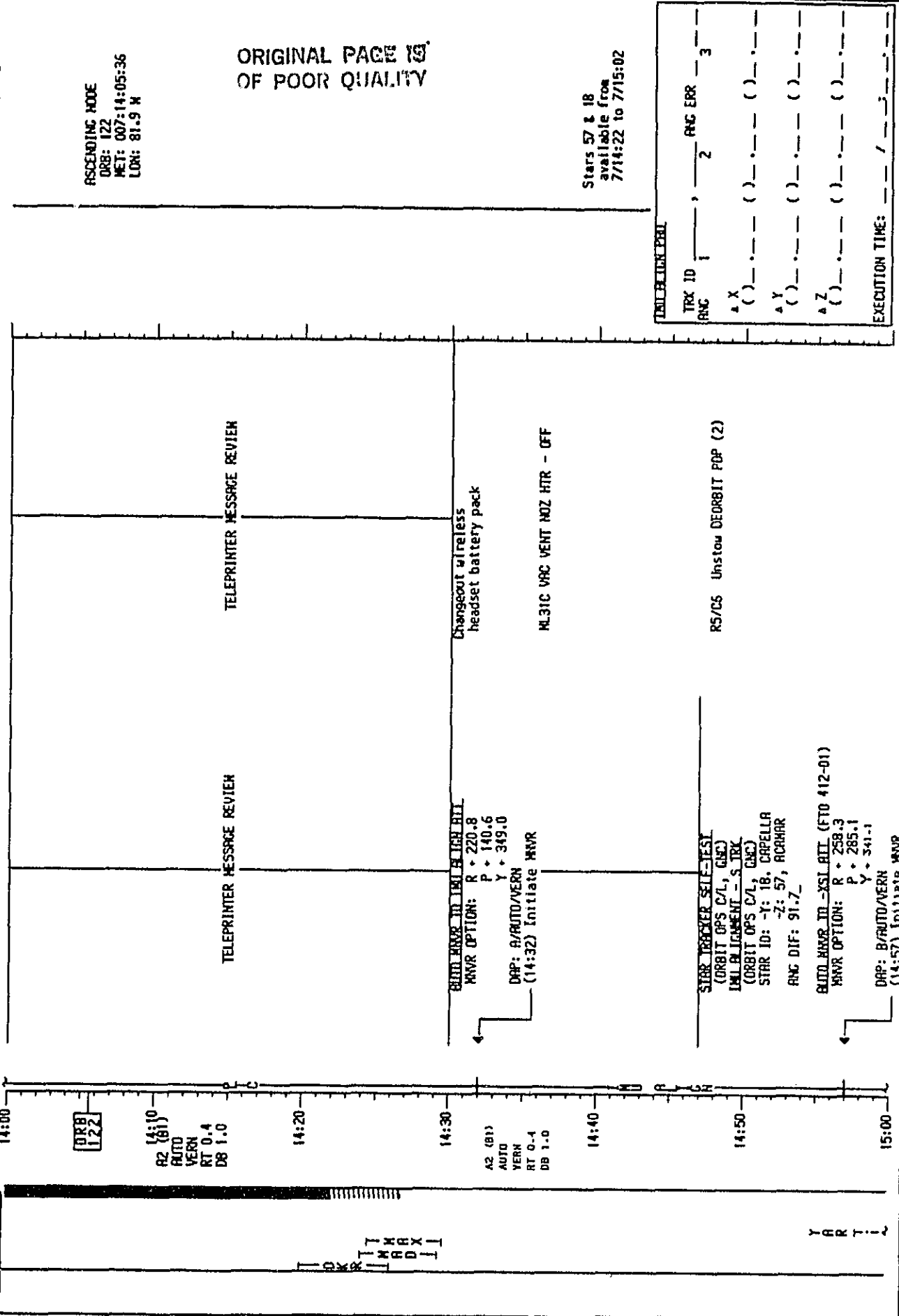
NOTES

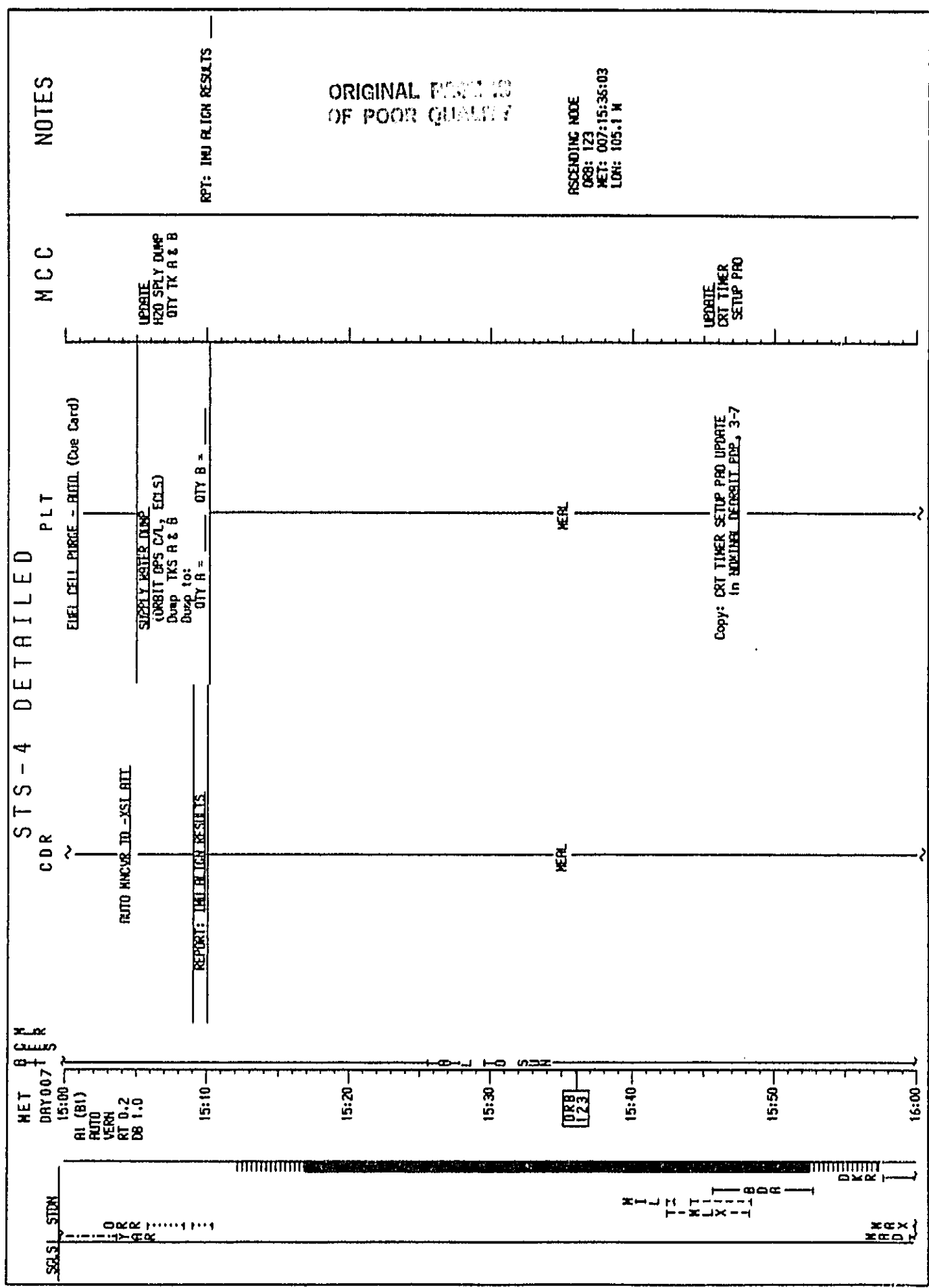
ORIGINAL PAGE 13  
OF POOR QUALITY

MET 0800  
DAY 007

CDR STS-4 DETAILED

PLT NOTES





# STS-4 DETAILED

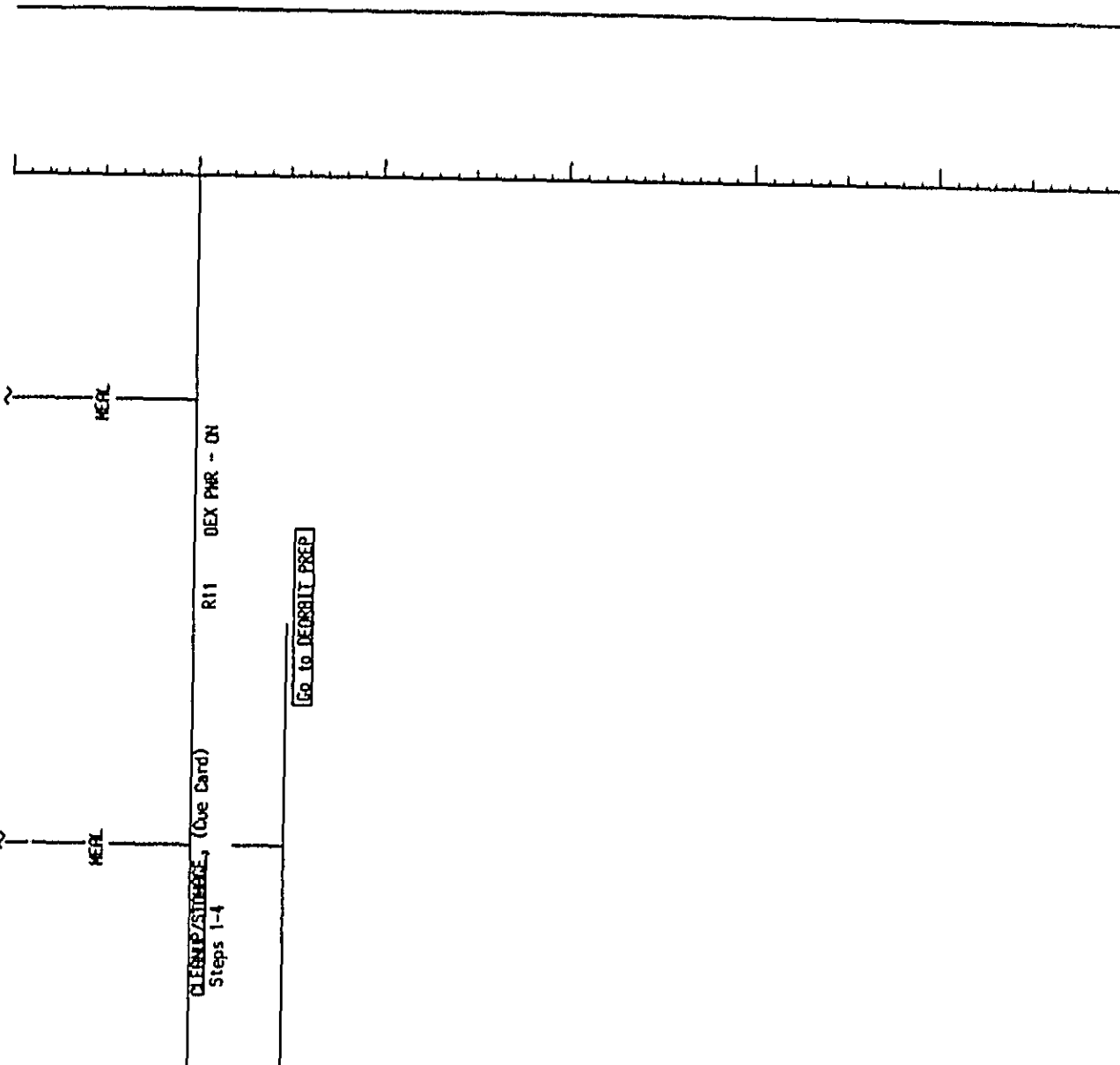
NET 0600  
CM 007

NOTES

MCC

PLT

CDR



ORIGINAL PAGE 13  
OF POOR QUALITY

05714782 STS4/FIN

5-92

## 24 HOURS AFTER EXTENSION DAY

The 24 Hours After Extension Day Timeline is designed to follow a Deorbit Prep Backout on Flight Day 9. It therefore assumes that the nominal timeline plus an extra day have already been accomplished.

Detailed timeline pages are provided from MET 7/22:00 until time for the Deorbit Prep.

To compute the MET time at which this timeline is entered, take the Deorbit Burn TIG time and add ~1 hr 50 min for Deorbit Prep Backout. Note that no activities are scheduled for the first hour and 15 minutes to allow extra time for reconfiguration or troubleshooting.

24 HRS AFTER  
EXTENSION DAY

ORIGINAL PAGE IS  
OF POOR QUALITY

5/14/82 SSS/FLM



CMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE			
186:17:00/ 187:05:00		008:00:00/ 008:12:00		186:12:00/ 187:00:00		9 / 186		CDT		11.0		JULY 5, 1982		STS-4		FINAL		5/14/82			
CMT : 186 17		18		20		21		22		23		0		1		2		3		4	
FD : 9												CMT: 187		8		9		10		11	
NET : 008 0																				DCT: 187	
																				12	
CDR		EXERCISE		MERL		PRE SLEEP		PRE SLEEP		PRE SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP	
PLT		EXERCISE		MERL		PRE SLEEP		PRE SLEEP		PRE SLEEP		SLEEP		SLEEP		SLEEP		SLEEP		SLEEP	
DAY/NIGHT		128		129		130		131		132		133		134		135		136		137	
ORBIT																					
EARTH TRACE																					
W/SRA																					
GTON		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT	
COVERAGE		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT		-BOT	
SCLS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS	
COVERAGE		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS	
OPS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS	
DEORB XSC		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS	
EDM		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS		-CTS	
ATTITUDE		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
MANEUVERS		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
TV/VTR		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
CFES		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
MLR		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
NOTES:																					

ORIGINAL PAGE 10  
OF POOR QUALITY

GMT (D:H:M)		MET (D:H:M)		COT (D:H:M)		FD/DOY		BETA		MOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE	
187:05:00/ 187:17:00		008:12:00/ 009:00:00		187:00:00/ 187:12:00		10/ 187		12.7				JULY 6, 1982		STS-4		FINAL		5/14/82	
CMT : 187 5		6		7		8		9		10		11		12		13		14	
FD : 9		13		14		15		16		17		18		19		20		21	
MET : 008 12		13		14		15		16		17		18		19		20		21	
CDR		SLEEP		POST SLEEP/PTR MSG REVIEW		SLEEP		POST SLEEP/PTR MSG REVIEW		SLEEP		POST SLEEP/PTR MSG REVIEW		SLEEP		POST SLEEP/PTR MSG REVIEW		SLEEP	
PLT		SLEEP		POST SLEEP/PTR MSG REVIEW		SLEEP		POST SLEEP/PTR MSG REVIEW		SLEEP		POST SLEEP/PTR MSG REVIEW		SLEEP		POST SLEEP/PTR MSG REVIEW		SLEEP	
DAY/NIGHT		ORBIT		136		137		138		139		140		141		142		143	
EARTH TRACE W/SAR		136		137		138		139		140		141		142		143		144	
CSTON COVERAGE		-DOR		-DOR		-DOR		-DOR		-DOR		-DOR		-DOR		-DOR		-DOR	
SGLS COVERAGE		-DOR		-DOR		-DOR		-DOR		-DOR		-DOR		-DOR		-DOR		-DOR	
OPS DEGR KSC EDM		136:11		137:11		138:11		139:11		140:11		141:11		142:11		143:11		144:11	
ATTITUDE		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
MANEUVERS		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
TV/VIR		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
CFES		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
MLR		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP		-ZLV Y-POP	
NOTES:																			

ORIGINAL PAGE  
OF POOR QUALITY

5/14/82 SISO:IN

5-96

• ENTRY CONFIC • NO SH LIST/VER  
• ENTRY CONFIC • NO SH LIST/VER

• LAST MERL CLEANUP



# STS-4 DETAILED

MET ARM  
DAY 007

NOTES

MCC

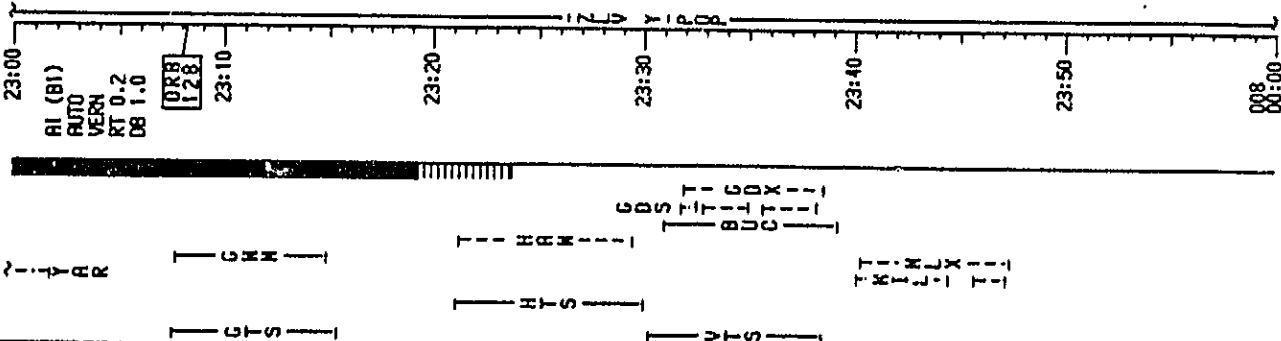
PLT

CDR

ASCENDING NODE  
ORB: 128  
MET: 007:23:08:11  
LON: 139 1 E

ORIGINAL PAGE 18  
OF POOR QUALITY

TPR  
BLOCK DATA  
WEATHER PRO  
B-32/129-132  
UPLINK  
ORBITER S.V.



MET 0000  
DRY 008

AI (B1)  
AUTO  
VERA  
RT 0.2  
DB 1.0

008  
129

ST S  
HRN T L

CDR STS-4 DETAILED PLT

NOTES

MCC

ORIGINAL PAGE 10  
OF FOUR QUALITY

ASCENDING NODE  
008: 129  
MET: 008:00:38:38  
LON: 116.0 E

EXERCISE

# STS-4 DETAILED

NET  
DAY 008

CDR

PLT

NOTES

MCC

PRIVATE MEDICAL COMMUNICATION  
(If Required)

PRIVATE MEDICAL COMMUNICATION  
(If Required)

EXERCISE

MEAL PREP (Cue Card)

ORIGINAL PAGE 15  
OF POOR QUALITY

If 1 REV LITE followed  
by DEBBIT PREP BACKOUT,  
would enter these pro-  
cedures at approx 1:50

MET  
DAY 008

STS-4  
CDR

NOTES

MCC

PLT

02:00 02:10 02:20 02:30 02:40 02:50 03:00

RI (B1)  
AUTO  
VERN  
RT 0.2  
DB 1.0

ORB  
130

ASCENDING NODE  
ORB: 130  
MET: 008:02:09:05  
LON: 92.9 E

ORIGINAL PAGE IS  
OF POOR QUALITY

MEAL

MEAL

10 S

10 S

10 S





# STS-4 DETAILED

NET OPER

CDR

PLT

NOTES

MCC

FIRE/SMOKE DETECT/SUPPRESS TEST  
(ORBIT OPS C/L, EPS)

ANNUNCIATOR C/A TDR TEST  
(ORBIT OPS C/L, EPS)

MCC ONLY  
COORD C/A/FOA  
LIMITS CLEANUP  
FOR DREN SLEEP

TPR  
BLOCK DATA  
WEATHER PRO  
B-33/133-136

EUEL CELL PIERCE - 91111 (One Card)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

ORIGINAL VALUE IN  
OF POOR QUALITY

KEY  
DRY008

STS-4 DETAILED

CDR

PLT

MCC

NOTES

05:00  
AI (BI)  
AUTO  
VERA  
RT 0.2  
DB 1.0

05:10  
ORB  
132

05:20

05:30

05:40

05:50

06:00

1105

1105

1105

1105

1105

PRE SLEEP ACTIVITY

SLEEP

PRE SLEEP ACTIVITY

SLEEP

UPLINK  
SPC LOBO -  
1ST COMM  
ALERT  
CNO  
RDR SLEEP  
CONFIG

ASCENDING NODE  
ORB: 132  
MET: 008:05:09:59  
LON: 46.6 E

ORIGINAL PAGE 13  
OF POOR QUALITY

5-104

5/14/82 STS4/FIN

# STS-4 DETAILED

NET 06:00  
DAY008

AI (BI)  
AUTO  
VERN  
RT 0.2  
DB 1.0

NOTES

MCC

PLT

CDR

ORIGINAL PAGE 10  
OF POOR QUALITY

ASCENDING NODE  
ORB: 133  
MET: 008:06:40:25  
LON: 23.4 E

SLEEP

SLEEP

ORB  
133



# STS-4 DETAILED

NET PCM  
DAY008

12:00  
R1 (B1)  
AUTO  
VERN  
RT 0.2  
DB 1.0

PLT

MCC

NOTES



SLEEP

SLEEP

ASCENDING NODE  
ORB: 137  
MET: 008:12:42:11  
LON: 69.0 N

UP LINK  
SPC LOAD-  
CLEAR COMM  
ALERT

DM X  
KARX  
KDX  
Z

MET  
DAY 008

STS-4 DETAILED

PLT

MCC

NOTES

13:00 13:10 13:20 13:30 13:40 13:50 14:00

RI (81)  
AUTO  
VERN  
RT 0.2  
DB 1.0

SLEEP

SLEEP

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

POST SLEEP ACTIVITY  
(ORBIT OPS C/L, CREW SYS)

Shave electrode sites, if reqd

ORIGINAL PAGE  
OF POOR QUALITY

# STS-4 DETAILED

MET  
DRY0081

CDR

PLT

MCC

NOTES

14:00 14:10 14:20 14:30 14:40 14:50 15:00

RI (B1)  
AUTO  
VERN  
RT 0.2  
DB 1.0

ORB  
138

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

INITIAL MESSAGE REVIEW  
MAYOR OPTION: R \* 46 .6  
P \* 339 .1  
Y \* 11 .9  
DAP: A/AUTO/VERN  
(14:32) Initiate MAYR

SUBJECT: SELF-TEST  
(ORBIT OPS C/L, GNC)  
INITIAL ALIGNMENT - S.TX  
(ORBIT OPS C/L, GNC)  
STAR ID: -Y: 57, ACPHAR  
-Z: 18, CAPELLA  
ANG DIF: 91 .7

INITIAL MESSAGE REVIEW  
MAYOR OPTION: R \* 257 .9  
P \* 285 .9  
Y \* 341 .2  
DAP: A/AUTO/VERN  
(14:55) Initiate MAYR

ELEL CELL PURGE - RUM (Due Card)

ASCENDING NODE  
ORB: 138  
MET: 008:14:12:38  
LON: 92.2 N

ORIGINAL POSITION  
OF POOR QUALITY

Stars 57 & 18  
available from  
8/14:33 to 8/15:11

LEDEITE  
H2O SPLY DUMP  
QTY TX R E B

TABLE 1: DATA

REC'D 10: -Y	-Z	ANG ERR	3
ANG			
A X	( )	( )	( )
A Y	( )	( )	( )
A Z	( )	( )	( )
EXECUTION TIME: --- / --- / ---			

# STS-4 DETAILED

MET  
0800  
15:00

CDR

PLT

NOTES

SUPPLY WATER LINE  
(ORBIT OPS C/L, ECL)  
Dump TXS A & B  
Dump to:  
QTY A = QTY B =

REPORT: INITIAL RESULTS

Changeout wireless  
headset battery pack - if wireless  
use planned

RPT: IMU FLICK RESULTS -

ORIGINAL PAUL IN  
OF POOR QUALITY

ASCENDING NODE  
008: 139  
MET: 008:15:43:04  
LON: 115.3 N

HERL

HERL

5-110

5/14/82 SISKATIM

T I Y A R I I I

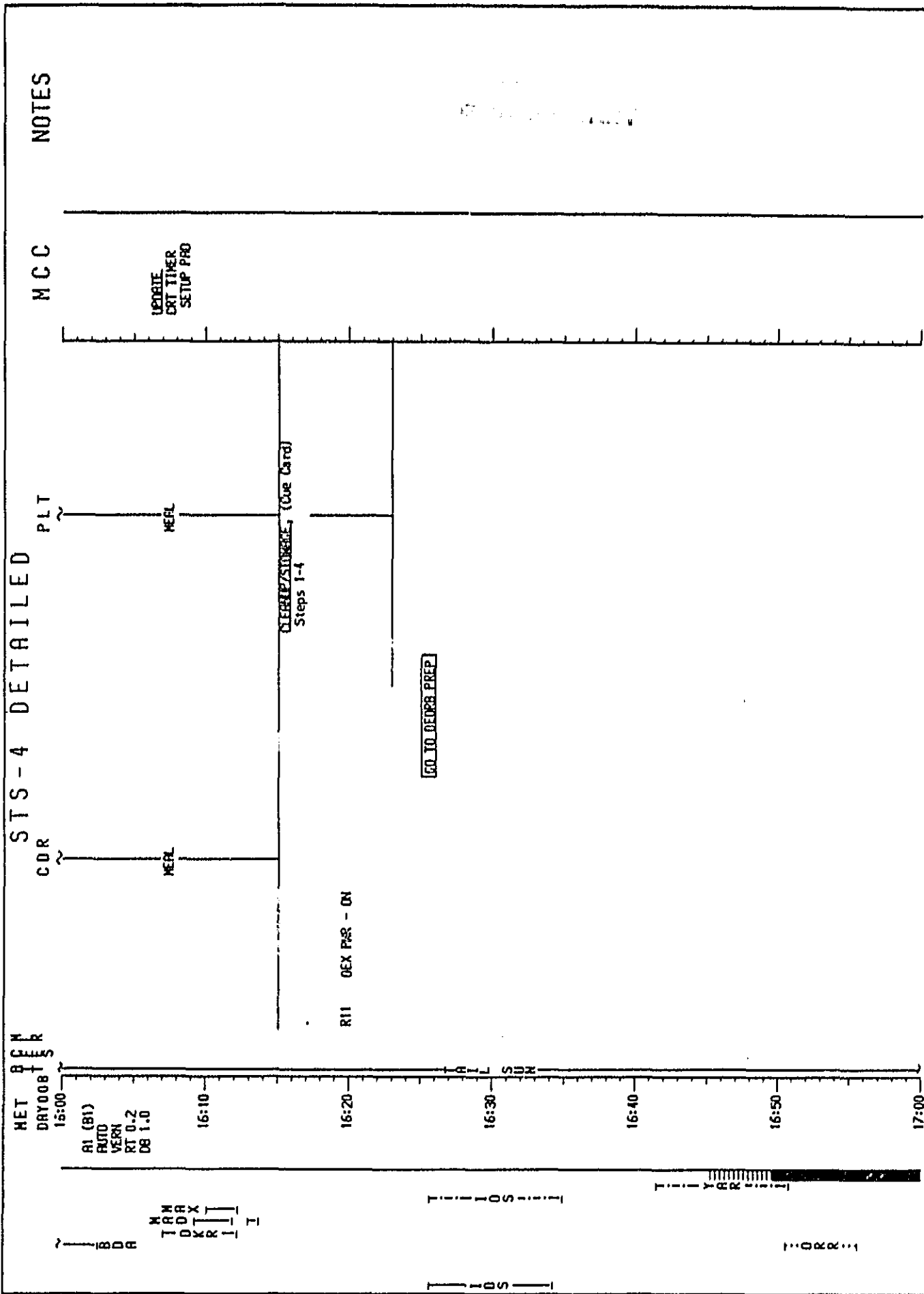
I I O R R I I

M I L T I I I M T I X B D R I I I

008  
139



# STS-4 DETAILED



# CONSUMABLES CURVES

FWD RCS PROPELLANT & He PRES.	TBS
AFT RCS PROPELLANT & He PRES.	TBS
OMS PROPELLANT CURVE (R & L POD)	TBS
OMS He PRESSURE (R & L POD)	TBS
OMS N2 PRESSURE (R & L POD)	TBS
SUPPLY WATER	TBS
CRYO H2 CURVE	TBS
CRYO O2 CURVE	TBS

CONSUMABLES  
CURVES

CREW ACTIVITY PLAN NOTES  
(CONSTRAINTS AND GUIDELINES)

FLIGHT DESCRIPTION.....	7-2
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CAP NOTES

CREW ACTIVITY PLAN NOTES  
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION - MAJOR EVENTS

MISSION DURATION (day/hr:min:sec) - 6/23:37:57

<u>LAUNCH (KSC)</u>	June 27, 1982
MET (day/hr:min:sec)	0/00:00:00
Day of Year	178
CDT/GMT	10:00/15:00

<u>MECO</u>	
MET (day/hr:min:sec)	0/00:08:34.08
ORBIT ha/hp (nm)	87 x -10.3

<u>OMS-1</u>	
MET (day/hr:min:sec)	0/00:10:34
$\Delta V$ (fps)	162.
$\Delta T$ (min:sec)	01:38
ORBIT ha/hp (nm)	129.8 x 34

<u>OMS-2</u>	
MET (day/hr:min:sec)	0/00:37:39
$\Delta V$ (fps)	175
$\Delta T$ (min:sec)	01:44
ORBIT ha/hp (nm)	130.2 x 129.7

<u>OMS-3</u>	
MET (day/hr:min:sec)	0/04:29:11.6
$\Delta V$ (fps)	62.3
$\Delta T$ (min:sec)	0:36.7
ORBIT ha/hp (nm)	164.8 x 129.9

<u>OMS-4</u>	
MET (day/hr:min:sec)	0/05:14:12.5
$\Delta V$ (fps)	61.6
$\Delta T$ (min:sec)	0:36
ORBIT ha/hp (nm)	165.2 x 164.8

<u>DEORBIT</u>	
MET (day/hr:min:sec)	6/22:41:49
$\Delta V$ (fps)	315.2
$\Delta T$ (min:sec)	2:55
ORBIT ha/hp (nm)	162 x -5

<u>ENTRY INTERFACE</u>	
MET (day/hr:min:sec)	6/23:08:36

<u>LANDING (EDW)</u>	July 4, 1982
MET (day/hr:min:sec)	6/23:37:57
Day of year	185
CDT	09:24

## B. CREW

### 1. Crew designations and responsibilities

- a. Commander (CDR): Prime crewman for launch, entry, aborts and contingency EVA. Responsible for overall command of the vehicle including the safety of both vehicle and crew.
  - b. Pilot (PLT): Prime crewman for RMS operations and CFES activities. Responsible for on-orbit management of STS.
2. A typical crew day will be that specified in the STS Work Day Handbook (Ref. 3). The daily on-orbit STS activities and their scheduling constraints are identified in the referenced document.
  3. The crew will wear Emergency Ejection Suits (EES) from launch through post-insertion and will don them again for entry. Whenever the EES is worn, OBS sensors are also worn. During the rest of the flight, in-flight garments are worn.
  4. For crew sleep periods, the middeck and flight deck speaker boxes will be configured for air-to-ground voice and C&W tones. A level check of the speaker boxes is performed prior to the first sleep period. During sleep the WCCUs will be turned off and stowed.

## C. ORBITER SYSTEMS

### 1. Electrical Power System

- a. A crew-initiated automatic purge of the fuel cells will be scheduled approximately every 12 hours.
- b. The fuel cell purge schedule is shown in Table 9-1.

### 2. Communications and Instrumentation

- a. The Operational Instrumentation (OI) system will be managed from the ground through uplink commands coordinated with the crew. Exceptions to this would be the result of contingencies. Real-time OI data will be transmitted to MCC during each ground station pass via the S-Band PM downlink. In parallel with this, one of the two operations recorders will dump recorded OI data at a 5-to-1 or 8-to-1 playback-to-record ratio (depending upon whether or not voice is included in the recorded data). One OI recorder will be recording at all times, and the other will dump at every station pass via the S-Band FM downlink. Video downlink causes an exception to this recorder dump plan, but only during the station passes where TV is scheduled as a crew activity.

- b. The Development Flight Instrumentation (DFI) system will be crew controlled. The Wideband Ascent Recorder is not used on orbit. The PCM Recorder will be operated during the entire mission in one of three modes: CONTINUOUS RECORD, HI SAMPLE (a 10 second snapshot of data every 5 minutes) and LO SAMPLE (a 10 second snapshot of data every 10 minutes). The Wideband Mission Recorder will be operated in the continuous record mode with all tracks recording in parallel during OMS and RCS burns and as required for FTOs or FSOs. DFI data will be downlinked every ground station pass via a separate S-Band DFI FM downlink. This data will be recorded at the ground station for post-flight shipment to MCC. Recorded DFI data will not be dumped to ground stations during on-orbit operations.
- c. There are thirteen (13) GSTDN sites for on-orbit coverage: ORR, BUC, GDS, MIL, BDA, HAW, GWM, AGO, ACN, MAD, YAR, DKR, and BOT, and one (1) SGLS site, IOS. The BUC site does not support data dumps via S-band FM downlink. The IOS site will normally only support S-band PM downlink and down voice for this flight. The site will normally be supporting DOD requirements, but can be configured real time if required to support S-band up voice, PM uplink and FM downlink.
- d. Three (3) GSTDN sites can be used for real-time TV: GDS, MIL, and HAW.
- e. Nine (9) GSTDN sites and one (1) SGLS site have UHF voice capability: GDS, MIL, BDA, HAW, GWM, ACN, BUC, MAD, DKR, and IOS.
- f. Two (2) sites have only UHF voice capability: YAR, and BOT.
- g. There are five (5) SGLS sites available for on-orbit coverage: GTS, HTS, NHS, VTS, and IOS. IOS is the only site with voice capability and there is only voice via UHF while supporting DOD requirements.

### 3. Guidance and Navigation

- a. The Orbiter state vector is uplinked about once every three orbits.
- b. IMU alignments will be routinely scheduled approximately every twelve (12) hours.
- c. Both star trackers are left on continuously except for special tests. A self-test of the star tracker will be performed once a day, normally just prior to the IMU alignment scheduled after the sleep periods.

d. Each IMU will be aligned with different REFSMMATs to provide skewed platforms for enhancement of redundancy management at launch and entry. The launch REFSMMATs have a square root of five skewing and the preferred skew for entry is a square root of six. The REFSMMATs will be changed for entry normally at about 00/03:35 MET. In order to simplify recovery procedures for some contingency cases, one of the IMUs will have the same REFSMMAT for launch and entry. For the case where an IMU fails prior to the switch to the square root of six REFSMMATs, the IMU REFSMMATs, for entry, will be changed to a square root of two skewing to enhance the redundancy management during entry.

e. The on-orbit avionics configuration for STS-4 is listed below. GPC 3 (freeze dried) and GPC 5 (BFS) will be turned off at -0/01:00 MET.

GPCs - 2 RUN (1 GNC, 1 SM), 2 OFF, 1 INTERMITTENT (GNC)  
IMUs - 3 OPERATE  
STAR TRACKERS - 2 ON  
MASS MEMORY UNITS - 2 ON  
FLIGHT CRITICAL MDMs - 8 ON

f. The ADI RELMATs provide a means to change the reference system for presenting vehicle attitudes to the crew without having to reposition the IMU platforms. The RELMATs support specific flight phase requirements and are defined as listed below.

1) ASCENT (OPS 1 and 6)

'INRTL' Position:

This RELMAT will provide a +X sense ADI ball reading of roll 0°, pitch 0°, and yaw 0° when the vehicle is pointed at 0° Right Ascension, 0° Declination and the vehicle +Y axis is pointed at the celestial North Pole.

'REF' Position:

This will be a pad-oriented inertial RELMAT with the vehicle +X axis downrange along the first stage launch azimuth and the +Z towards the center of the earth along the launch pad radius vector at the time of lift off. This provides a +X sense ADI ball reading of roll 55.30 (launch azimuth), pitch 90°, and yaw 0° at liftoff.

'LVLH' Position:

This RELMAT will provide for an unbiased LVLH frame in major modes 104, 105, and 106 (i.e., the bias matrix will be an identity matrix). In major modes 101, 102, 103 and 601, the LVIY reference frame will be used.

2) ON-ORBIT (OPS 2 and 8)

'INRTL' Position:

This RELMAT will provide a +X sense ADI ball reading of roll  $0^0$ , pitch  $0^0$ , and yaw  $0^0$  when the vehicle +X axis is pointed at  $0^0$  Right Ascension,  $0^0$  Declination and the vehicle +Y axis is pointed at the celestial pole.

'REF' Position:

This RELMAT will provide a +X sense ADI ball reading of roll  $0^0$ , pitch  $0^0$ , and yaw  $0^0$  when the vehicle +X axis is in the direction of the velocity vector and the +Z axis is directed radially down to the center of the earth at the orbital noon time which is closest to the midway MET between TIG for nominal OMS-2 and TIG for nominal deorbit burn.

'LVLH' Position:

This RELMAT will provide for an unbiased LVLH frame (i.e., the bias matrix will be an identity matrix).

3) ENTRY (OPS 3)

'INRTL' Position:

This RELMAT will provide a +X sense ADI ball reading of roll  $0^0$ , pitch  $0^0$ , and yaw  $0^0$  when the vehicle is pointed at  $0^0$  Right Ascension,  $0^0$  Declination and the vehicle +Y axis is pointed at the celestial North Pole.

'REF' Position:

Same as 'INRTL' position.

'LVLH' Position:

Unbiased.



- g. The OPS-2 I-loaded DAP configuration is currently planned to be:

	DAP A	DAP B
Translation Pulse	0.1	0.02
Rotation Discrete Rate - NORM	0.20/sec	0.50/sec
- VERNIERS	0.20/sec	0.20/sec
Rotation Pulse - NORM	0.1	0.04
- VERNIERS	0.01	0.002
Rotation Compensation - NORM	0.0	0.0
- VERNIERS	0.0	0.0
Attitude Deadband (R,P,Y axis)		
- NORM	5.00	3.00
- VERNIERS	1.00	1.00
Rate Deadband - NORM	0.20/sec	0.20/sec
- VERNIERS	0.020/sec	0.020/sec
Jet Opt Pitch	1	1
Yaw	1	1
Cntl Accel	0	0

- h. The OPS-3 Transition DAP configuration is:

Rotation Discrete Rate	0.20/sec
Attitude Deadband	3.50
Rate Deadband	0.30/sec

#### 4. Propulsion

The major burns maneuver schedule for STS-4 is identified in Section 7.A, FLIGHT DESCRIPTION - MAJOR EVENTS.

#### 5. Environmental Control and Life Support Subsystem (ECLS)

- The CO<sub>2</sub> absorbers are not installed for launch or entry. Both canisters are initially installed at approximately 0/05:20 MET and are then alternately replaced with new canisters within the required frequency of approximately every 24 hours. The canisters are both removed approximately 4 hours prior to the deorbit burn ignition during the deorbit preparations on entry day. The installation/replacement schedule is shown in Table 9-3.
- The waste water tank will be loaded to 40% at launch, with sufficient ullage volume to accommodate waste water accumulation during the flight. The tank will be as full as feasible at the planned end of the mission.
- The supply water tanks will be sufficiently loaded at launch so that planned launch day deorbit opportunities can be supported through the use of combined supply and waste water, without opening the payload bay doors. Thus all tanks will be full at launch except Tank A which will be 45% full. This allows sufficient ullage to handle fuel cell water production during the ascent phase. Potential supply water dumps are scheduled approximately every 12 hours in the Crew Activity Plan which may or may not be required. A real-time call will be made prior to each

scheduled dump to inform the crew if a dump is required and to what level. Tanks A & B will be dumped to a level that will allow the tanks to be full prior to the next daily group of EDW deorbit opportunities. The supply water dump schedule is shown in Table 9-2.

#### D. INTERIM TELEPRINTER SYSTEM (ITS)

1. The Interim Teleprinter System (ITS) will be used for STS-4. The system will provide an on-orbit capability to receive and reproduce text data (such as procedures and CAP updates or changes) from the MCC during routine and off-nominal situations.
2. The teleprinter is located on the middeck in a standard flight locker (MA9F) adjacent to Avionics Bay 3A. Foam insulation inside the locker is used to reduce the noise from the teleprinter during operation.

#### E. TELEVISION/PHOTOGRAPHY

1. The Closed Circuit Television (CCTV) system will be used for STS-4. This system provides two cameras for in-cabin coverage and two RMS and four payload bay TV cameras for coverage of payload bay activities. The system, after activation, can be managed by ground commands during live coverage passes. For TV coverage outside of STDN coverage, the crew must manage the CCTV system.
2. There is a video tape recorder (VTR) available to record video during periods when there is no STDN coverage. The video is recorded on 30-minute cassettes and will normally not be dumped to the ground. Recorded video can be dumped to the ground if desired since the VTR output (dump) currently is hooked to the PL1 video input, allowing recorded video to be played back into the Orbiter communication system as if it were a PL1 (Spacelab) TV camera input. VTR management must be performed by the crew.
3. 16mm, 35mm, and 70mm camera systems are available.

#### F. REMOTE MANIPULATOR SYSTEM (RMS)

##### 1. OMS/RCS CONSTRAINTS

- a. VRCS - No constraints during RMS OPS
- b. PRCS - Constraints during Loaded and Unloaded RMS OPS:
  1. Usage not permitted under the following conditions:
    - a. RMS JOINT in a Singularity
    - b. RMS at a Reach Limit
    - c. RMS in Test Mode
    - d. During EE OPS
    - e. Loaded RMS/PRCS Interaction Test will be NO GO for Failed VRCS.
  2. Must be on Tail Only Jets with a 30 deadband when on AUTO DAP.

- c. OMS - Usage not permitted with RMS uncradled or attached to a berthed Payload.
2. No part of the RMS shall be positioned within the following distances of an RCS Thruster:
  - a. PRCS - 15 ft
  - b. VRCS - 3 ft
3. No part of the RMS/Payload/End Effector will be maneuvered outside the Crew/CCTV field of view, unless the joint angles and sequence to be maneuvered have been verified as acceptable.

#### G. PAYLOADS

##### 1. IECM (Induced Environmental Contamination Monitor)

The crew will be required to operate the IECM switch on Panel R11 four times during the flight. These switch operations, which mode the IECM mass spectrometer, are performed after payload bay door openings, for plume impingement, contamination mapping, and gas release maneuver FTOs, per the STS-4 Flight Requirements Document (Ref. 1). The IECM mass spectrometer must be turned off when the payload bay doors are closed to prevent damage to the mass spectrometer by pressure buildup in the payload bay.

##### 2. MLR (Monodisperse Latex Reactor)

The MLR is activated via a single switch prior to the first crew sleep period and runs continuously for 19.5 hours. The experiment occupies the space of three middeck lockers.

##### 3. CFES (Continuous Flow Electrophoresis System)

The CFES provides a processing system which can segregate biological samples using a separation process based on the relative motion of charged particles through an electric field (electrophoresis). For STS-4, the crew will be required to operate the payload twice during the early portion of the flight. Each operating period lasts approximately eight hours. The PLT has been designated as the prime crewman for CFES operations. The CFES payload is located on the Orbiter middeck. A low acceleration level is desired during CFES operations.

##### 4. GAS (Get-Away Special)

The GAS payload is a self-contained experiment package that requires minimal crew activity. After the crew is given approval for orbit operations, the crew unstows a handheld controller and activates the payload. Once activated, an internal controller sequentially initiates the biological, materials processing, and physical science experiments at the appropriate time. The experiments do not require any special attitudes during their operation. Deactivation and stowing of the handheld controller occur before deorbit preparation.

5. NOSL (Night/Day Optical Survey of Thunderstorm Lightning)

The NOSL experiment is performed in the Orbiter cabin. The experiment requires crew operations for unstowing and setting up in the aft flight deck, for on-orbit operations using targets of opportunity, and for stowage. A -ZLV attitude is desired for taking data.

ON-ORBIT CREW ACTIVITY  
FUNCTIONAL TEST OBJECTIVES (FTOs),  
FUNCTIONAL SUPPLEMENTARY OBJECTIVES (FSOs)

INTRODUCTION.....	8-2
TABLE 8-1 - STS-4 FTOs/FSOs.....	8-3

FTOs/FSOs

## INTRODUCTION

The following Table describes the scheduling data and rationale for on-orbit crew activity related FT0s/FS0s for STS-4. The current FRD (Ref. 1) was used for compiling this table.

FT0s/FS0s

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOS/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
401-01	Ascent Performance Data Collection	N/A	No crew interaction required except for DFI recorder configurations
402-01	SRB Performance Data Collection		
403-01	On-Orbit Performance Data Collection		
404-01	Entry/Approach and Landing Performance Data		
411-01	Structural Conditioning	PTC initiated at 06/04:52	Ground will provide go/no-go for crew thermal conditioning
412-01	Attitude Hold Thermal Response	1/07:49 - 1/19:12 1/23:18 - 4/18:18 4/19:24 - 6/04:32 6/04:52 - 6/16:02	PTC -XSI (Tail To Sun) +ZSI (Bottom to Sun) PTC
412-02	Startracker Coldsoak Thermal Response	2/04:15 - 2/18:54 2/18:54	Both startrackers powered off Both startrackers powered on Both startrackers powered off for ~12 hours followed by ~12 hours of both startrackers powered on. A startracker self-test and a normal IMU alignment will be performed between the two periods

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
412-03	Supply Water Dump Line and Nozzle Thermal Response		Has been deleted
412-04	Waste Water Dump Line and Nozzle Thermal Response		Has been deleted
412-05	FRCS Thermal Soakback, One Forward Engine	4/15:40 - 5/00:10	Performed after 20 hours of -XSI or anytime after start of -XSI. Inhibit 3 FRCS engines for 5 hours; fire F3F for 30 seconds; inhibit all 3 engines for 5 hours
412-06	FRCS Thermal Soakback, Two Forward Engines	5/22:41 - 6/04:24	Performed no earlier than 20 hours after initiation of -XSI thermal test period. Requires inhibiting 3 FRCS engines for 5 hours, subsequent firing of 2 of the 3 engines for 30 seconds, and a final 5-hour period of inhibiting of all 3 engines prior to return to normal operations.
412-07	FRCS Thermal Soakback, Pulse Mode	3/16:00 - 4/02:50	Performed after 20 hours in either -XSI or +ZSI; inhibit 3 FRCS engines for 5 hours; perform five 30-second firings of F3F (each firing separated by 30 minutes); inhibit all 3 engines for 5 hours
412-08	ARCS Thermal Soakback, One Aft Engine	5/22:41 - 6/04:24	Performed after 20 hours of +ZSI; inhibit aft firing PRCS engines and VRCS engines in port pod; fire L1A for 100 seconds; inhibit engines involved for 5 hours

C-4



TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
413-01	ET Passive Ablation Sensor Target Photography	8 seconds after ET SEP	
421-01	Early Entry Roll Characteristics	Q = 22.0 psf	
421-02	Aerothermodynamics/ Performance	V = 21,000 fps	
421-03	Aerothermodynamics/ Performance	V = 18,000 fps	
421-04	Aerothermodynamics/ Performance	V = 14,000 fps	
421-05	Aerothermodynamics/ Performance	V = 8,400 fps	
421-06	Supersonic Lateral Trim	M = 3.2	
421-07	Transonic Lateral/ Directional Stability		Has been deleted
421-08	Wing and Tail Excitation (Structural PTI)	M = 2.2	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTG5/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
431-01	Window Observation and Reporting		Has been deleted
432-01	Ascent Wing and Tail Excitation	V = 460 fps	
433-01	Payload Bay Liner Performance	0/02:55	
434-01	Flight Debris Investigation	0/02:57	
441-01 441-02	Vacuum Inerting Inerting Verification	Between OMS 1&2 0/05:20 - 0/05:52	The inerting is terminated prior to the OMS-2 burn Between 6 and 12 hours after completion of FTO 441-01
442-01	Simulated OMS Engine Failure (OMS-3)		Has been deleted
444-01	Hydraulic System Warm-up	During FCS C/O on FD5	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
445-01	PRSD Stratification Test, 85% Level	Not Scheduled	Provide cryo supply with 15% density to all 3 FCPs. Configure electrical loads for 19.3 kW split among 3 FCPs and maintain for 2 hours. Plus and then minus pitch maneuvers of 175° at 1°/sec performed
445-02	PRSD Stratification Test, 50% Level	Not Scheduled	
445-03	PRSD Stratification Test, 15% Level	5/22:20 - 5/22:30	
451-01	PLBD Initial Alignment Test		Has been deleted
451-02	PLBD Final Alignment Test		Has been deleted
451-03	PLBD Cold Case Performance	4/16:50 - 4/18:10	Performed as near the end of the -XSI thermal test period as practicable based on operational requirements. Theodolite must be installed. Calibration sightings required during initial PLBD operations
451-04	PLBD Thermal Gradient Performance	6/00:50 - 6/02:10	Performed as near the end of the +ZSI thermal test period as practicable based on operational requirements

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
452-01	RMS Software Stop Performance		Has been deleted
452-02	Singularity Management	5/02:00 - 5/02:35	
452-03	Unloaded Arm Response to PRCS	5/01:18 - 5/01:58	
453-01	Contamination Mapping	1/20:20 - 1/22:50	IECM limited to 4 hours of operations after switching to internal battery power
454-01	RCS Plume Flow Field Measurement	2/01:10 - 2/03:10	IECM limited to 4 hours of operations after switching to internal battery power
455-01	Payload Deployment and Berthing Performance	1/20:10 - 1/23:15 2/01:00 - 2/03:30	
455-02	RMS/PRCS Interactions	Shopping List Item	
461-01	Whole Gas Samples	6/03:20	No crew interaction required
461-03	ATCO Performance Evaluation	N/A	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FT0s/FS0s

FT0 NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
462-01	Radiator Coating Bond Verification	5/00:48 - 5/01:18	
466-01	Radiator Performance Test	0/02:20 - 0/08:00 1/06:55 - 1/23:25 2/20:05 - 2/22:54 5/20:20 - 6/01:30	Desired to perform this test during the following attitudes: -ZLV; -ZSI; -XSI or +XSI; PTC; +ZSI; Gravity Gradient
467-01	VPC Freezer Heat Exchanger Dynamics	0/23:50 - 1/07:50	Freezer should have been off at least six (6) hours
467-02	Long Term VPC Freezer Temperature Stability	1/23:45 - 1/23:50 3/02:15 - 3/02:20 4/05:30 - 4/05:35 5/05:35 - 5/05:40 5/22:55 - 5/23:00	
467-03	Sample Freezing Storing and Return	1/07:50 - 1/07:56	FT0 467-01 must be accomplished before this FT0
471-01	S-Band and UHF Antenna Patterns	6/05:20 - 6/05:40	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
472-01	Autoland Controlled Approach	N/A	
472-02	Crosswind Landing Performance	N/A	
473-01	Startracker Operation During Water Dumps	1/07:23 - 1/07:43	Daylight required
473-03	Forward Station COAS Calibration	0/08:24 - 0/08:29	
474-01	Navigation Base Stability	1/19:31 - 1/19:50 4/18:30 - 4/18:50	
475-01	Cold Case CCTV Evaluation, Non-Operating		Has been deleted
475-02	Cold Case CCTV Evaluation, Operating		Has been deleted
476-01	Backup Orbital Navigation	3/04:19 - 3/04:37 5/18:14 - 5/18:34 5/19:42 - 5/20:04	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOS/FSOs

FTO/FSO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
477-01	PRCS Narrow Deadband Attitude Hold Performance	3/23:20 - 3/23:25	
477-02	Passive Gravity Gradient Attitude Hold	0/06:05 - 0/07:56 0/19:15 - 1/06:52	
479-01	On-Orbit TACAN Nav Aid Capability	2/19:35 - 3/00:37 3/23:40 - 4:00:10 4/00:53 - 4/02:43	
S401-01	Tile Gap Heating Data Collection	N/A	
S402-01	Catalytic Surface Effects Data Collection	N/A	
S403-01	Dynamic, Acoustic and Thermal Environment Data	N/A	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

F50 NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
S431-01	IECM Operation	Post Insertion 4/23:05 - 4/23:50  Deorbit Prep	IECM switch is in POS 2 at launch; at four (4) defined times during the flight, the crew places the IECM switch in POS 1 position for 30 $\pm$ 5 seconds and then back to POS 2 position
S432-01	Infrared Imagery of Shuttle	N/A	
S433-01	Prelaunch and Ascent ACIP Data Operation	Prelaunch & Ascent	Gravity gradient required
S433-02	Quiescent On-Orbit Data Collection	1/03:18 - 1/03:24	
S433-03	Deorbit Through Landing ACIP Data Collection	Deorbit and Entry	
S434-01	Deploy Radiation Dosimeter Pouches	N/A	
S434-02	Stow Radiation Dosimeter Pouches	N/A	



TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FT0s/FS0s

FS0 NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
S435-01	GAS Operation	0/05:25 - 6/00:00	
S436-01	CFES Operation	0/20:25 - 1/04:15 2/19:45 - 3/04:09	Experiment run #1 Experiment run #2
S441-01	NOSL Operations	0/21:50 - 6/05:05	
S442-01	MLR Operation	0/06:30 - 1/02:15	Low acceleration level desired for 19.5 hours
S443-01	In-flight Motion Sickness Data Collection	0/08:45 1/08:15 2/07:25 3/06:15 4/05:55 5/05:55 6/05:55	
S491-01	Crew Activities TV	1/01:24 - 1/01:32 3/01:40 - 3/02:10 3/19:15 - 3/19:25 4/22:51 - 4/23:00 5/20:07 - 5/20:16	Group 2

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOS/FSOs

FSO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
S491-02	IECM Handling Demonstration TV	2/01:10 - 2/03:10	Group 2
S491-03	Activities of Opportunity TV	TBD	Group 2
S491-04	TV of the CDR	3/19:15 - 3/19:25	Group 1
S491-05	TV of the PLT	1/01:24 - 1/01:32 3/01:40 - 3/02:10 4/22:51 - 4/23:00 5/20:07 - 5/20:16	Group 1
S492-01	Launch Photography (16mm)	Ascent	Group 1
S492-02	Crew Activities (16mm)	1/01:50 - 1/04:15 2/02:38 - 2/21:25 4/00:11 - 4/00:16 4/01:30 - 4/02:12 4/16:50 - 4/18:10	Group 2
S492-03	Payload Bay Photography (16mm)	1/20:20 - 1/22:55	Group 1, associated with RMS/IECM OPS
S492-04	Unscheduled Photography (16mm)	TBD	Group 2

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOS/FSOs

FSO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
S492-05	Approach and Landing Photography (16mm)	Entry	Group 1
S492-06	Photography of the CDR (16mm)	2/20:38 - 2/21:25	Group 2
S492-07	Photography of the PLT (16mm)	4/00:11 - 4/00:16	Group 2
S493-01	Crew Activity Photography (35mm)	TBD	Group 2
S493-02	Payload Bay Photography (35mm)	TBD	Group 2
S493-03	On-Orbit Photography (35mm)	TBD	Group 2
S493-04	Still Photography of the CDR (35mm)	TBD	
S493-05	Still Photography of the PLT (35mm)	TBD	

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TABLE 9-1  
ORBITER FUEL CELL PURGES

APPROX MET (D/HH:MM)	FUEL CELL PURGE	
	NO.	$\Delta t$ (HH:MM)
Post-Ins (0/02:52)	1	
0/08:40	2	04:48
0/18:30	3	09:50
1/08:10	4	13:40
1/18:00	5	09:50
2/07:15	6	13:15
2/17:15	7	10:00
3/06:05	8	12:50
3/16:10	9	10:05
4/05:50	10	13:40
4/15:40	11	09:50
5/05:50	12	14:10
5/15:45	13	09:55
6/05:50	14	14:05
6/16:20	15	10:30
Deorbit Prep (6/20:33)	16	05:53

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TABLE 9-2  
ORBITER WATER DUMPS (SUPPLY)

APPROX MET (D/HH:MM)	SUPPLY H2O	
	NO.	$\Delta t$ (HH:MM)
0/07:44	1	
0/17:55	2	10:11
1/07:24	3	13:29
1/18:00	4	10:36
2/05:50	5	11:50
2/17:10	6	11:20
3/04:45	7	11:35
3/16:05	8	11:20
4/03:05	9	11:00
4/19:05	10	16:00
5/03:10	11	08:05
5/15:55	12	12:45
6/02:10	13	10:15
6/16:25	14	14:15

TABLE 9-3  
CO2 ABSORBER REPLACEMENT

APPROX MET (D/HH:MM)	CO2 ABSORBER REPLACEMENT			
	ABSORBER NO.	POSITION	POSITION A $\Delta t$ (HH:MM)	POSITION B $\Delta t$ (HH:MM)
* 0/05:20	1 & 2	A & B		
** 0/08:35	3	A	03:15	
1/08:10	4	B		26:50
2/07:20	5	A	46:45	
3/06:00	6	B		45:50
4/05:35	7	A	46:15	
5/05:40	8	B		47:40
6/05:40	9	A	48:05	
***6/17:50			13:50	37:15

\*INITIAL INSTALLATION OF BOTH CO2 ABSORBERS

\*\*CO2 ABSORBER NO 1 IS REWRAPPED AND SAVED FOR CONTINGENCY

\*\*\*BOTH CO2 ABSORBERS REMOVED FOR ENTRY

TABLE 9-4  
CRYO MANAGEMENT

	MET	O2/H2 TANK HTRS SWITCH CONFIGURATION
POST INSERTION	0/03:00 (STATUS AS OF)	O2 TK1 & 2 HTRS A,B (four) - AUTO H2 TK1 & 2 HTRS A,B (four) - AUTO O2 TK3 HTRS (two) - AUTO H2 TK3 HTRS (two) - AUTO O2 TK4 HTRS (two) - OFF H2 TK4 HTRS (two) - OFF
PREP (PRSD TEST)	5/15:50	O2 TK1,2,3,4 HTRS (all) - OFF H2 TK1,2,3,4 HTRS (all) - OFF
POWERUP (PRSD TEST)	5/19:53	O2,H2 TK4 HTRS A (two) - AUTO
PERFORMANCE (PRSD TEST)	5/22:20	
POST (PRSD TEST)	5/22:35	O2 TK1 & 2 HTRS A (two) - AUTO H2 TK1 & 2 HTRS A,B (four) - AUTO O2,H2 TK3 HTRS A (two) - AUTO O2,H2 TK4 HTRS A (two) - OFF



TABLE 9-5 - DFI WIDEBAND ASCENT RECORDER USAGE

APPROX MET (DD/HH:MM:SS)	MODE	PWR	Δt USAGE (MM:SS)	ACCUM USAGE (MM:SS)	TAPE REMAINING (MM:SS)	P*
~-00/00:05:30	CONT	ON	--	00:00	32:00	T
00/00:13:00	STBY	ON	18:30	18:30	13:30	B
00/00:35:00	CONT	ON	00:00	18:30	13:30	S
00/00:39:00	STBY	ON	04:00	22:30	9:30	
00/01:05:00	STBY	OFF	04:00	22:30	9:30	

\*Data Priority based from IQ down to 1 (OI Data is 10)

TABLE 9-6 - DFI WIDE BAND MISSION RECORDER USAGE

APPROX MET (DD/HH:MM)	MODE	PWR	Δt USAGE (MM:SS)	ACCUM USAGE (HH:MM:SS)	TAPE REMAINING (HH:MM:SS)	REASON	P*
-00/00:06	CONT	ON	--	00:00:00	02:00:00	LAUNCH THRU OMS 1	T
00/00:13	STBY	ON	19:00	00:19:00	01:41:00		B
00/00:35	CONT	ON	00:00	00:19:00		OMS 2	S
00/00:39	STBY	ON	04:00	00:23:00	01:37:00		
00/01:05	STBY	OFF					
00/04:27	CONT	ON	00:00	00:23:00		OMS 3	
00/04:31	STBY	OFF	04:00	00:27:00	01:33:00		
00/05:12	CONT	ON	00:00	00:27:00		OMS 4	
00/05:16	STBY	OFF	04:00	00:31:00	01:29:00		
01/03:16	STBY	ON	00:00	00:31:00	01:29:00		
01/03:20	CONT	ON	00:00	00:31:00	01:29:00	ACIP ON-ORBIT TEST	
01/03:21	STBY	ON	01:00	00:32:00	01:28:00		
01/03:26	STBY	OFF	00:00	00:32:00	01:28:00		
03/18:48	CONT	ON	00:00	00:31:00		F3F PULSE MODE TEST	
03/18:52	STBY	OFF	04:00	00:36:00	01:24:00		
03/19:18	CONT	ON	00:00	00:36:00		F3F PULSE MODE TEST	
03/19:22	STBY	OFF	04:00	00:40:00	01:20:00		
03/19:48	CONT	ON	00:00	00:40:00		F3F PULSE MODE TEST	
03/19:52	STBY	OFF	04:00	00:44:00	01:16:00		
03/20:18	CONT	ON	00:00	00:44:00		F3F PULSE MODE TEST	
03/20:22	STBY	OFF	04:00	00:48:00	01:12:00		
03/20:48	CONT	ON	00:00	00:48:00		F3F PULSE MODE TEST	
03/20:52	STBY	OFF	04:00	00:52:00	01:08:00		
04/19:13	CONT	ON	00:00	00:52:00		RCS TEST, 1 FWD ENG	
04/19:17	STBY	OFF	04:00	00:56:00	01:04:00		
05/22:44	CONT	ON	00:00	00:56:00		RCS TEST, 2 FWD/1 AFT ENG	

\*Data Priority based from 10 down to 1 (OI Data is 10)

\*\*Time of 2 min sample should correspond to the approximate time sleep station readings are taken

TABLE 9-5 - DFI WIDEBAND MISSION RECORDER USAGE (CONTINUED)

APPROX MET (DD/HH:MM)	MODE	PWR	Δt USAGE (MM:SS)	ACCUM USAGE (HH:MM:SS)	TAPE REMAINING (HH:MM:SS)	REASON	P*
05/22:48	STBY	OFF	04:00	01:00:00	01:00:00	WB CAL	
06/18:00	CONT	ON	00:00				
06/18:01	STBY	OFF	01:00	01:01:00	00:59:00	DEORBIT BURN	
06/22:40	CONT	ON	00:00	01:01:00			
06/22:46	STBY	OFF	06:00	01:07:00	00:53:00	EI-3 THRU ROLLOUT	
06/23:06	CONT	ON	00:00	01:07:00			
06/23:39	STBY	OFF	46:00	01:53:00	00:07:00		

\*Data Priority based from 10 down to 1 (OI Data is 10)

\*\*Time of 2 min sample should correspond to the approximate time sleep station readings are taken

TABLE 9-7 - DFI PCM RECORDER USAGE

APPROX MET (DD/HH:MM)	MODE	$\Delta t$ (HH:MM)	$\Delta t$ TAPE** USAGE (HH:MM:SS)	ACCUM USAGE (HH:MM:SS)	TAPE RE- MAINING (HH:MM:SS)	REASON	P*
-00/00:06	CONT	--	--	--	05:52:00	ASCENT THRU VAC INERT +5	T
00/00:23	HI SAMP	00:29	29:00	00:29:00	05:23:00	RA	B
00/00:35	CONT	00:12	00:22	00:29:22	05:22:38	OMS 2	S
00/00:39	LO SAMP	00:04	04:00	00:33:22	05:18:38		
00/01:59	CONT	01:20	01:17	00:34:39	05:17:21	PLBD OPENING	
00/02:02	LO SAMP	00:03	03:00	00:37:39	05:14:21	NOMINAL CONFIG	
00/04:27	CONT	02:25	02:34	00:40:13	05:11:47	OMS 3 BURN	
00/04:31	LO SAMP	00:04	04:00	00:44:13	05:07:47	NOMINAL CONFIG	
00/05:12	CONT	00:41	00:44	00:44:57	05:07:03	OMS 4 BURN	
00/05:16	LO SAMP	00:04	04:00	00:48:57	05:03:03	NOMINAL CONFIG	
00/05:22	CONT***	00:06	00:00	00:48:57	05:03:03	INERTING VERIFICATION	
00/05:27	HI SAMP***	00:05	05:00	00:53:57	04:58:03	INERTING VERIFICATION	
00/05:52	LO SAMP	00:25	00:44	00:54:41	04:57:19	NOMINAL CONFIG	
01/20:20	HI SAMP	38:28	41:26	01:36:07	04:15:53	IECM CONTAM MAPPING	
01/22:55	LO SAMP	02:35	05:19	01:41:26	04:10:34	NOMINAL CONFIG	
03/18:48	CONT	43:53	47:18	02:28:44	03:23:16	F3F PULSE MODE TEST	
03/19:00	HI SAMP	00:12	12:00	02:40:44	03:11:16	F3F PULSE MODE TEST	
03/19:18	CONT	00:18	00:33	02:41:17	03:10:43	F3F PULSE MODE TEST	
03/19:30	HI SAMP	00:12	12:00	02:53:17	02:58:43	F3F PULSE MODE TEST	
03/19:48	CONT	00:18	00:33	02:53:50	02:58:10	F3F PULSE MODE TEST	
03/20:00	HI SAMP	00:12	12:00	03:05:50	02:46:10	F3F PULSE MODE TEST	
03/20:18	CONT	00:18	00:33	03:06:23	02:45:37	F3F PULSE MODE TEST	
03/20:30	HI SAMP	00:12	12:00	03:18:23	02:33:37	F3F PULSE MODE TEST	

\*Data Priority based from 10 to 1 (OI Data is 10)

\*\*11 sec of tape used every 5 min 11 sec for HI SAMPLE and 10 min 11 sec for LOW SAMPLE

\*\*\*If inerting verification is not required, recorder stays at LO SAMPLE

TABLE 9-7 - DFI PCM RECORDER USAGE (CONTINUED)

APPROX MET (DD/HH:MM)	MODE	$\Delta t$ (HH:MM)	$\Delta t$ TAPE** USAGE (HH:MM:SS)	ACCUM USAGE (HH:MM:SS)	TAPE RE- MAINING (HH:MM:SS)	REASON	P*
03/20:48	CONT	00:18	00:33	03:18:56	02:33:04	F3F PULSE MODE TEST	
03/21:00	HI SAMP	00:12	12:00	03:30:56	02:21:04	F3F PULSE MODE TEST	
04/01:43	CONT	04:43	09:54	03:40:50	02:11:10	FCS C/O	
04/01:49	LO SAMP	00:06	06:00	03:46:50	02:05:10	NOMINAL CONFIG	
04/05:50	HI SAMP	04:01	04:13	03:51:03	02:00:57	LAST 10 HRS OF -XSI	
04/19:13	CONT	13:23	28:14	04:19:17	01:32:43	RCS TEST, 1 FWD ENG	
04/19:25	HI SAMP	00:12	12:00	04:31:17	01:20:43	RCS TEST, 1 FWD ENG	
05:00:12	LO SAMP	04:47	10:05	04:41:22	01:10:38	NOMINAL CONFIG	
05:22:44	CONT	22:32	24:12	05:05:34	00:46:26	RCS TEST, 2 FWD/1 AFT ENG	
05:22:56	HI SAMP	00:12	12:00	05:17:34	00:34:26	RCS TEST, 2 FWD/1 AFT ENG	
06/04:26	LO SAMP	05:30	11:33	05:29:07	00:22:53	NOMINAL CONFIG	
06/18:31	HI SAMP	14:05	15:02	05:44:09	00:07:51	RADIATOR BYPASS/STOW RADIATORS	
06/19:20	HI SAMP	00:49			01:36:00	DFI PCM RCDR REWIND	
06/19:48	CONT		00:28			PLBD CLOSING/STRAIN GAUGE	
06/19:52	HI SAMP		00:04				
06/19:57	CONT					RADIATOR HEAT SINK	
06/20:02	HI SAMP		00:05			TIG-4 MINUTES THRU POST LANDING	
06/22:36	CONT					POST ROLLOUT	
-07/00:00	HI SAMP		01:24				

\*Data Priority based from 10 to 1 (OI Data is 10)

\*\*11 sec of tape used every 5 min 11 sec for HI SAMPLE and 10 min 11 sec for LOW SAMPLE

\*\*\*If inerting verification is not required, recorder stays at LO SAMPLE

TABLE 9-8 - ATTITUDE AND EVENT TIMELINE

NET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS ATT RATE (deg) (O/sec)		DISC RATE (O/sec)	DAP			EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		ATT	RATE		SEL	CONT	RCS	θ	φ	θ	φ	
0/00:08:34	MECO						3.5	0.3	*	AUTO	*					
0/00:08:49	ET SEP (4 fps, -Z)						3.5	0.3	*	AUTO	*					
0/00:09:30	INITIATE MANUAL MNVR TO OMS-1 BURN ATT	--	--	--	--		N/A	N/A	*	MAN ACCEL	*	--	--	--	--	
0/00:10:00	OMS-1 BURN ATT	337.2	190.5	346.5	INRTL		3.5	0.3	*	AUTO	*	69	359	99	181	
0/00:10:31.3	OMS-1 IGNITION						3.5	0.3	*	AUTO	*					162.1 fps ΔV
0/00:12:07.3	OMS-1 CUTOFF						3.5	0.3	*	AUTO	*					
0/00:13:21	MPS DUMP TERMINATED						3.5	0.3	*	AUTO	*					
0/00:20:00	INITIATE AUTO MNVR TO OMS-2 BURN ATT	--	--	--	--		3.5	0.3	*	AUTO	*					MNVR TIME = 10 MIN EIG ANG = 115
0/00:30:00	OMS-2 BURN ATT	19.1	312.6	342	INRTL		3.5	0.3	*	AUTO	*	36	16	146	356	
0/00:37:39.3	OMS-2 IGNITION						3.5	0.3	*	AUTO	*					174.8 fps ΔV
0/00:39:26.5	OMS-2 CUTOFF						3.5	0.3	*	AUTO	*					
0/00:55:00	DPS RECONFIG TO GNC 2 (OMS-2 ATT)						10.0	0.2	A	AUTO	NORM					
0/01:05:00	INITIATE -ZLV, XPOP +YBY FWD ATT MODE	--	--	--	--		10.0	0.2	A	AUTO	NORM					MNVR TIME = 9 MIN EIG ANG = 103
0/01:14:00	-ZLV, XPOP ATT (PLBD OPENING) (120° ROLL BIAS)	0	192	90	LVLH		10.0	0.2	A	AUTO	NORM	90	348	89	54	TGT: EARTH P 90 Y 348 OM 270
0/03:41:00	FREE DRIFT						N/A	N/A	A	MAN PULSE	VERN					
0/04:10:00	INITIATE AUTO MNVR TO OMS-3 ATT	--	--	--	--		1.0	0.02	A	AUTO	VERN	--	--	--	--	MNVR TIME = 11 MIN EIG ANG = 130

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEAGBANDS ATT RATE (deg) (°/sec)		DISC RATE (°/sec)	DAP		EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		ATT	RATE		SEL	COUNT	RCS	6	6	6	
0/04:21:00	OMS-3 BURN ATT	331.6	153.4	359.3	INRTL		1.0	0.02	A	AUTO	VERN	40	0	60	181
0/04:29:11.6	OMS-3 IGNITION						3.5	0.3	A	AUTO	NORM				52.3 fps ΔV
0/04:29:48.3	OMS-3 CUTOFF						1.0	0.02	A	AUTO	VERN				
0/04:55:00	INITIATE AUTO MWVR TO OMS-4 ATT	--	--	--	--		1.0	0.02	A	AUTO	VERN	--	--	--	MWVR TIME = 15 MIN EIG ANG = 180
0/05:10:00	OMS-4 BURN ATT	28.4	333.8	1	INRTL		1.0	0.02	A	AUTO	VERN	56	0	119	359
0/05:14:12.5	OMS-4 IGNITION						3.5	0.3	A	AUTO	NORM				61.6 fps ΔV
0/05:14:48.6	OMS-4 CUTOFF						1.0	0.02	A	AUTO	VERN				
0/05:47:00	INITIATE GRAVITY GRADIENT ATT MODE	--	--	--	--		1.0	0.02	A	AUTO	VERN	--	--	--	MWVR TIME = 14 MIN EIG ANG = 153
0/06:01:00	GRAVITY GRADIENT ATT (PLB TO NORTH)	249.2	268.2	358.1	LVLH		N/A	N/A	A	MAN PULSE	VERN	3	157	141	109
0/07:47:00	TERMINATE GRAVITY GRADIENT	92.7	298	345.6	INRTL		1.0	0.02	A	MAN DISC	VERN	3	157	158	294
0/07:56:00	INITIATE AUTO MWVR TO IMU ALIGN ATT	--	--	--	--		1.0	0.02	A	AUTO	VERN	--	--	--	MWVR TIME = 13 MIN EIG ANG = 147
0/08:09:00	IMU ALIGN ATT	250	336.3	338.8	INRTL		1.0	0.02	A	AUTO	VERN	58	154	125	124
0/08:17:00	INITIATE AUTO MWVR TO COAS CAL ATT	--	--	--	--		1.0	0.02	A	AUTO	VERN	--	--	--	-Y ST TO STAR #43 -Z ST TO STAR #15 ANG SEP = 84.1
0/08:18:00	COAS CAL ATT	253.2	343.7	330.1	INRTL		1.0	0.02	A	AUTO	VERN	90	140	120	118
0/08:24:00	+X COAS CAL						N/A	N/A	B	MAN PULSE	VERN				+Xby TO STAR #26
0/08:29:00	ATTITUDE HOLD						1.0	0.02	A	AUTO	VERN				

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ) Roll Pitch Yaw			ATT MODE	DEADBRANDS ATT RATE (deg) (°/sec)		DISC RATE (°/sec)	DAP		EARTH θ	SUN φ	REMARKS
									SEL	CONT			
0/08:35:00	INITIATE -ZLV, XPOP +Yby FWD ATT MODE	--	--	--	--	1.0	0.02	0.2	A	AUTO	--	--	MNVR TIME = 9 MIN EIG ANG = 99 P 90
0/08:44:00	-ZLV, XPOP ATT (120 ROLL BIAS)	0	192	90	LVLH	1.0	0.02	0.2	A	AUTO	90 348	55	TGT: EARTH OH 270
0/18:32:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	--	--	MNVR TIME = 13 MIN EIG ANG = 146
0/18:45:00	IMU ALIGN ATT	16.2	172.5	13.3	INRTL	1.0	0.02	0.2	A	AUTO	131 114	72 143	-Y ST TO STAR #15 -Z ST TO STAR #43 ANG SEP = 84.1
0/18:57:00	INITIATE GRAVITY GRADIENT ATT MODE	--	--	--	--	1.0	0.02	0.2	A	AUTO	--	--	MNVR TIME = 8 MIN EIG ANG = 86 P 357.6
0/19:05:00	GRAVITY GRADIENT ATT (PLB TO NORTH)	249.2	268.2	358.1	LVLH	N/A	N/A	N/A	A	MAN PULSE	3 157	16 115	TGT: EARTH OH 249.2
1/06:43:00	TERMINATE GRAVITY GRADIENT	92.3	358.6	19.1	INRTL	1.0	0.02	0.2	A	MAN DISC	3 157	90 293	
1/06:52:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	--	--	MNVR TIME = 15 MIN EIG ANG = 170
1/07:07:00	IMU ALIGN/STRK OPS DURING H2O DUMP ATT (FTO 473-01)	212.5	77.9	44.4	INRTL	1.0	0.02	0.2	A	AUTO	30 102	27 101	-Y ST TO STAR #27 -Z ST TO STAR #54 ANG SEP = 83.7
1/07:49:00	INITIATE AUTO MNVR TO PTC ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	--	--	MNVR TIME = 9 MIN EIG ANG = 100
1/07:58:00	PTC ATT	132.3	236	60.1	INRTL	1.0	0.02	0.2	A	AUTO	88 201	90 355	SUN IN YZby PLANE +X TOWARD R
1/08:07:00	START 0.4 °/SEC PTC ROTATION	132.8	236	60.1	ROTR	1.0	0.02	0.4	A	AUTO	89 236	90 355	EIGEN AXIS P 358 Y 0 ROT RATE = 0.4 °/SEC
1/19:12:00	INITIATE AUTO MNVR TO NAV BASE STA ATT #1	--	--	--	--	1.0	0.02	0.2	A	AUTO	--	--	MNVR TIME = 12 MIN EIG ANG = 134
1/19:24:00	NAV BASE STA ATT #1 (FTO 474-01)	221.4	128.1	3.5	INRTL	1.0	0.02	0.2	A	AUTO	18 119	35 282	-Y ST TO STAR #40 -Z ST TO STAR #57 ANG SEP = 90.4
1/19:35:00	INITIATE AUTO MNVR TO IMU ALIGN/NAV BASE STA ATT #2	--	--	--	--	1.0	0.02	0.5	A	AUTO	--	--	MNVR TIME = 6 MIN EIG ANG = 180
1/19:41:00	IMU ALIGN/NAV BASE STA ATT #2	50.5	326.1	357.9	INRTL	1.0	0.02	0.5	A	AUTO	111 160	129 338	-Y ST TO STAR #57 -Z ST TO STAR #50 ANG SEP = 90.4



TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS ATT RATE		DISC RATE (0/sec)	DAP		EARTH θ	SUM θ	REMARKS
		Roll	Pitch	Yaw		(deg)	(0/sec)		SEL	RCS			
1/19:53:00	INITIATE AUTO MNVR TO -ZSI ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	MNVR TIME = 8 MIN ETG ANG = 95
1/20:01:00	-ZSI ATT	129.6	234.2	59.2	INRTL	1.0	0.02	0.2	A	AUTO	VERN	87 199	P 90 Y 0 04 90 TGT: SUM
1/20:20:00	IECM CONTAMINATION SURVEY (ETO 453-01)					3.0	0.02	0.3	B	AUTO & MAN	VERN		
1/22:55:00	RE-ESTABLISH -ZSI ATT					1.0	0.02	0.2	A	AUTO	VERN		
1/23:18:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	MNVR TIME = 10 MIN ETG ANG = 116
1/23:28:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	121 187 179 171	
2/01:10:00	IECM PLUME SURVEY (ETO 454-01)					3.0	0.02	0.2	A	AUTO & MAN	VERN		
2/03:10:00	RE-ESTABLISH -XSI ATT					0.1	0.02	0.2	B	AUTO	VERN		
2/03:56:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	MNVR TIME = 8 MIN ETG ANG = 92
2/04:04:00	IMU ALIGN ATT	256.2	13.7	345.8	INRTL	1.0	0.02	0.2	A	AUTO	VERN	57 153 91 128	-Y ST TO STAR #22 -Z ST TO STAR #51 ANG SEP = 84
2/04:22:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	MNVR TIME = 8 MIN ETG ANG = 92
2/04:30:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	118 12 180 0	
2/05:25:00	INITIATE AUTO MNVR TO RCS BURN 1 ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	
2/05:40:00	RCS BURN 1 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD TBD TBD TBD	
2/05:45:00	RCS BURN 1					3.0	0.2	0.5	8	MAN DISC	NORM		
2/05:46:00	ATTITUDE HOLD					1.0	0.02	0.2	A	AUTO	VERN		

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R, Euler Seq) Roll Pitch Yaw			ATT MODE	DEADBANDS ATT RATE (deg) (°/sec)		DISC RATE (°/sec)	DAP		EARTH		SUN		REMARKS
									SEL	CONT	RCS	δ	φ	δ	
2/05:47:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	
2/06:02:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	113	12	180	0
2/19:02:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 10 MIN EIG ANG = 114
2/19:12:00	IMU ALIGN ATT	61	240.3	318.3	INRTL	1.0	0.02	0.2	A	AUTO	VERN	165	200	143	137 -Y ST TO STAR #23 -Z ST TO STAR #14 ANG SEP = 91.4
2/19:27:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	MNVR TIME = 10 MIN EIG ANG = 114
2/19:37:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	113	14	180	0
3/01:12:00	INITIATE AUTO MNVR TO RCS BURN 2 ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	
3/01:27:00	RCS BURN 2 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD	TBD	TBD	TBD
3/01:32:00	RCS BURN 2					3.0	0.2	0.5	B	MAN DISC	NORH				
3/01:33:00	ATTITUDE HOLD					1.0	0.02	0.2	A	AUTO	VERN				
3/01:37:00	INITIATE AUTO MNVR TO POST BURN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	
3/01:52:00	POST RCS BURN 2 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD	TBD	TBD	TBD
3/02:07:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	
3/02:22:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	57	196	180	0
3/04:05:00	INITIATE AUTO MNVR TO IMU ALIGN/BACKUP NAV ATT #1	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 7 MIN EIG ANG = 74
3/04:12:00	IMU ALIGN/BACKUP NAV ATT #1 (FTO 476-01)	252.9	252.5	348.9	INRTL	1.0	0.02	0.2	A	AUTO	VERN	144	159	156	245 -Y ST TO STAR #41 -Z ST TO STAR #34 ANG SEP = 88.6

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R Euler Seq) Roll Pitch Yaw			ATT MODE	DEADBANDS ATT RATE (deg) (°/sec)		DISC RATE (°/sec)	DAP		EARTH		SUN		REMARKS
3/04:26:00	INITIATE AUTO MNVR TO BACKUP NAV ATT #2	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 4 MIN EIG ANG = 38 -Y ST TO STAR #20 -Z ST TO STAR #17 ANG SEP = 85
3/04:30:00	BACKUP NAV ATT #2	246.8	288.6	351	INRTL	1.0	0.02	0.2	A	AUTO	VERN	169	311	163	173
3/04:39:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	MNVR TIME = 5 MIN EIG ANG = 55
3/04:44:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	98	13	179	353
3/17:37:00	INITIATE AUTO MNVR TO IMJ ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 5 MIN EIG ANG = 53 -Y ST TO STAR #42 -Z ST TO STAR #15 ANG SEP = 89.1
3/17:42:00	IMJ ALIGN ATT	241.7	307.6	353.1	INRTL	1.0	0.02	0.2	A	AUTO	VERN	82	148	149	153
3/18:02:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	MNVR TIME = 5 MIN EIG ANG = 53
3/18:07:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	145	26	179	352
3/18:45:00	PRE FRCS THERMAL SOAKBACK CONFIG					5.0	0.2	0.2	A	AUTO	NORM				
3/18:50:00	-X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM				30 SEC F3F BURN
3/18:50:30	ATTITUDE HOLD					0.1	0.02	0.2	B	AUTO	VERN				
3/19:20:00	-X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM				30 SEC F3F BURN
3/19:20:30	ATTITUDE HOLD					0.1	0.02	0.2	B	AUTO	VERN				
3/19:50:00	-X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM				30 SEC F3F BURN
3/19:50:30	ATTITUDE HOLD					0.1	0.02	0.2	B	AUTO	VERN				
3/20:20:00	-X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM				30 SEC F3F BURN

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OF POOR QUALITY

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R Euler Seq) Roll Pitch Yaw			ATT MODE	DEADBANDS ATT RATE (deg) (°/sec)		DISC RATE (°/sec)	DAP		EARTH		SUN		REMARKS
3/20:20:30	ATTITUDE HOLD							0.1 0.02	B AUTO	VERN					
3/20:50:00	-X TRANS (FTO 412-07)							5.0 0.2	A AUTO	NORM					30 SEC F3F BURN
3/20:53:00	POST FRCS THERMAL SOAKBACK CONFIG							0.1 0.02	B AUTO	VERN					
3/23:18:00	PRCS ATT HOLD TEST (FTO 477-01)							0.1 0.2	A AUTO	NORM					
3/23:18:30	ATTITUDE HOLD							0.1 0.02	B AUTO	VERN					
3/23:41:00	INITIATE AUTO MNVR TO TACAN TRK ATT	--	--	--	--			5.0 0.2	A AUTO	NORM	--	--	--	--	P, Y JET OPT=3(TAIL CNL) MNVR TIME = 14 MIN EIG ANG = 170
3/23:56:00	TACAN TRK ATT (FTO 479-01)	21.4	347.8	29.2	INRTL			5.0 0.2	A AUTO	NORM	79 357	97 10			P 7.5 TGI: #3(KU) Y 0 LAT: -12.414 OH 180 LON: 130.883 EIGEN AXIS P 187.4 ROT RATE = 0.323 °/SEC
3/23:56:30	INITIATE TACAN NAV ROT	21.4	347.8	29.2	ROTR			5.0 0.2	A AUTO	NORM	81 357	97 10			
4/00:12:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--			0.1 0.02	B AUTO	VERN	--	--	--	--	MNVR TIME = 15 MIN EIG ANG = 178
4/00:27:00	-XSI ATT	192	278.9	336.8	INRTL			0.1 0.02	B AUTO	VERN	76 12	179 352			
4/01:45:00	FCS CHECKOUT - APU START							5.0 0.2	A AUTO	NORM					
4/01:53:00	APU SHUTDOWN							1.0 0.02	A AUTO	VERN					
4/01:55:00	SENSOR TEST							N/A	A MAN PULSE	VERN					
4/02:00:00	RE-ESTABLISH -XSI ATT	--	--	--	--			0.1 0.02	B AUTO	VERN	--	--	--	--	MNVR TIME = 3 MIN EIG ANG = 30
4/02:03:00	-XSI ATT	192	278.9	336.8	INRTL			0.1 0.02	B AUTO	VERN	55 7	179 352			
4/02:46:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--			1.0 0.02	A AUTO	VERN	--	--	--	--	MNVR TIME = 5 MIN EIG ANG = 53

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R Euler Seq)			ATT MODE	DEADBANDS ATT RATE (deg) (°/sec)		DISC RATE (°/sec)	DAP		EARTH		SUN		REMARKS	
		Roll	Pitch	Yaw		SEL	CONT		RCS	θ	φ	θ	φ			
4/02:51:00	IMU ALIGN ATT	241.7	307.6	353.1	INRTL	1.0	0.02	0.2	A	AUTO	VERN	104	145	149	153	-Y ST TO STAR #42 -Z ST TO STAR #15 ANG SEP = 89.1
4/03:02:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 5 MIN EIG ANG = 53
4/03:07:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	157	39	179	352	
4/04:15:00	INITIATE AUTO MNVR TO RCS BURN 3 ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	
4/04:30:00	RCS BURN 3 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD	TBD	TBD	TBD	
4/04:36:00	RCS BURN 3					3.0	0.2	0.5	B	MAN DISC	NORM					
4/04:37:00	ATTITUDE HOLD					1.0	0.02	0.2	A	AUTO	VERN					
4/04:47:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	
4/05:02:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	63	9	179	352	
4/18:18:00	INITIATE AUTO MNVR TO IMU ALIGN/NAV BASE STA ATT #1	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 11 MIN EIG ANG = 121
4/18:29:00	IMU ALIGN/NAV BASE STA ATT #1 (FTO 474-01)	165.6	157.2	4.3	INRTL	1.0	0.02	0.2	A	AUTO	VERN	31	131	57	350	-Y ST TO STAR #49 -Z ST TO STAR #32 ANG SEP = 87.8
4/18:35:00	INITIATE AUTO MNVR TO IMU ALIGN/NAV BASE STA ATT Q2	--	--	--	--	1.0	0.02	0.5	A	AUTO	VERN	--	--	--	--	MNVR TIME = 6 MIN EIG ANG = 180
4/18:41:00	IMU ALIGN/NAV BASE STA ATT #2 (FTO 474-01)	104.9	346.1	11.1	INRTL	1.0	0.02	0.5	A	AUTO	VERN	123	101	108	284	-Y ST TO STAR #32 -Z ST TO STAR #49 ANG SEP = 87.8
4/18:52:00	INITIATE AUTO MNVR TO FRCS THERMAL SOAKBACK ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 12 MIN EIG ANG = 144
4/19:04:00	FRCS THERMAL SOAKBACK ATT	317.6	227.7	54.5	INRTL	1.0	0.02	0.2	A	AUTO	VERN	81	42	90	180	+Z SI +X TOWARD R
4/19:13:00	FRCS THERMAL SOAKBACK CONFIG					5.0	0.2	0.2	A	AUTO	NORM					

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ) Roll Pitch Yaw			ATT MODE	DEADBANDS ATT RATE (deg) (°/sec)		DISC RATE (°/sec)	DAP		EARTH θ φ	SUN θ φ	REMARKS
									SEL	CONT	RCS		
4/19:15:00	-X TRANS (FTO 412-05)					5.0	0.2	0.2	A	AUTO	NORM		30 SEC F3F BURN
4/19:18:00	POST FRCS THERMAL SOAKBACK CONFIG					0.1	0.02	0.2	B	AUTO	VERN		
4/19:24:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	MNVR TIME = 1 MIN EIG ANG = 10
4/19:25:00	+ZSI ATT	321.2	224	51.4	INRTL	0.1	0.02	0.2	B	AUTO	VERN	101 124 90 179	P 270 Y 0 OM 267 TGT: SUN
4/20:55:00	INITIATE AUTO MNVR TO RCS BURN 4 ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	
4/21:10:00	RCS BURN 4 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD TBD TBD TBD	
4/21:15:00	RCS BURN 4					3.0	0.2	0.5	B	MAN DISC	NORM		
4/21:16:00	ATTITUDE HOLD					1.0	0.02	0.2	A	AUTO	VERN		
4/21:20:00	INITIATE AUTO MNVR TO POST BURN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	
4/21:35:00	POST RCS BURN 4 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD TBD TBD TBD	
4/21:52:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	
4/22:07:00	+ZSI ATT	321.2	224	51.4	INRTL	0.1	0.02	0.2	B	AUTO	VERN	84 50 90 180	P 270 Y 0 OM 267 TGT: SUN
4/22:34:00	INITIATE AUTO MNVR TO IECH GAS RELEASE ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	MNVR TIME = 10 MIN EIG ANG = 115
4/22:44:00	IECH GAS RELEASE ATT (FSO 5431-01)	0	90	270	LVLH	1.0	0.02	0.2	A	AUTO	VERN	90 270 77 254	P 0 Y 270 OM 90 TGT: EARTH
4/23:05:00	IECH GAS RELEASE ROTATION	345.4	206.5	61.7	ROTR	0.5	0.02	0.007	A	AUTO	VERN	90 270 77 170	EIGEN AXIS P 180 Y 0 ROT RATE = 0.007 °/SEC
4/23:50:00	STOP ROTATION/ATTITUDE HOLD	326.5	206.5	61.7	INRTL	1.0	0.02	0.2	A	AUTO	VERN	90 108 77 189	

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS		DISC RATE (°/sec)	DAP		EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		ATT (deg)	RATE (°/sec)		SEL	CONT	RCS	θ	φ	θ	
4/23:53:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	--	0.1	0.02	B	AUTO	VERH	--	--	--	MNVR TIME = 2 MIN EIG ANG = 17
4/23:55:00	+ZSI ATT	321.2	224	51.4	INRTL	0.1	0.02	0.2	B	AUTO	VERN	100	117	90	TGT: SUN P 270 Y 0 OM 267
5/01:18:00	PRE RMS/PRCS INTERACTION CONFIG (FTO 452-03)					N/A	N/A	N/A	B	MAN PULSE	NORM				
5/01:58:00	POST RMS/PRCS INTERACTION CONFIG					0.1	0.02	0.2	B	AUTO	VERN				
5/04:24:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 6 MIN EIG ANG = 64
5/04:30:00	IMU ALIGN ATT	12.4	208.6	4.9	INRTL	1.0	0.02	0.2	A	AUTO	VERN	144	104	104	-Y ST TO STAR #51 -Z ST TO STAR #22 ANG SEP = 84
5/04:48:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	MNVR TIME = 5 MIN EIG ANG = 64
5/04:54:00	+ZSI ATT	321.2	224	51.4	INRTL	0.1	0.02	0.2	B	AUTO	VERN	97	227	90	TGT: SUN P 270 Y 0 OM 267
5/05:05:00	RCS HOT FIRE TEST					N/A	N/A	N/A	A	MAN PULSE	NORM				
5/05:20:00	RE-ESTABLISH +ZSI ATT					0.1	0.02	0.2	B	AUTO	VERN				
5/15:45:00	FRCS/ARCS THERMAL SOAKBACK DAP CONFIG					5.0	0.2	0.2	A	AUTO	NORM				P, Y JET OPT = 3 (TAIL CNL)
5/17:57:00	INITIATE AUTO MNVR TO IMU ALIGN/BACKUP NAV ATT 1	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	MNVR TIME = 8 MIN EIG ANG = 86
5/18:05:00	IMU ALIGN/BACKUP NAV ATT 1	252.9	252.5	348.9	INRTL	3.0	0.2	0.2	A	AUTO	NORM	150	141	149	-Y ST TO STAR #41 -Z ST TO STAR #34 ANG SEP = 88.6
5/18:22:00	INITIATE AUTO MNVR TO BACKUP NAV ATT 2	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	MNVR TIME = 4 MIN EIG ANG = 38
5/18:26:00	BACKUP NAV ATT 2	246.8	288.6	351	INRTL	3.0	0.2	0.2	A	AUTO	NORM	158	339	165	-Y ST TO STAR #20 -Z ST TO STAR #17
5/18:35:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	MNVR TIME = 8 MIN EIG ANG = 92

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS		DISC RATE (°/sec)	DAP		EARTH		SUN	REMARKS		
		Roll	Pitch	Yaw		ATT RATE (deg)	ATT RATE (°/sec)		SEL	CONT	RCS	θ			φ	
5/18:43:00	+ZSI ATT	321.2	224	51.4	INRTL	3.0	0.2	0.2	A	AUTO	NORM	84	281	90	180	P 270 Y 0 OM 267 TGT: SUN
5/19:30:00	INITIATE AUTO MNVR TO BACKUP NAV ATT 1	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNVR TIME = 7 MIN EIG ANG = 75
5/19:37:00	BACKUP NAV ATT 1	255	255.8	0.6	INRTL	3.0	0.2	0.2	A	AUTO	NORM	145	153	145	241	-Y ST TO STAR #41
5/19:52:00	INITIATE AUTO MNVR TO BACKUP NAV ATT 2	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNVR TIME = 3 MIN EIG ANG = 36
5/19:55:00	BACKUP NAV ATT 2	246.8	288.6	351	INRTL	3.0	0.2	0.2	A	AUTO	NORM	164	347	165	180	-Y ST TO STAR #20 -Z ST TO STAR #17
5/20:07:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	5.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNVR TIME = 8 MIN EIG ANG = 92
5/20:15:00	+ZSI ATT	321.2	224	51.4	INRTL	5.0	0.2	0.2	A	AUTO	NORM	83	286	90	180	P 270 Y 0 OM 267 TGT: SUN
5/22:22:00	PRSD +PITCH MNVR (FTO 445-01)	321.2	224	51.4	ROTR	5.0	0.2	1.0	A	MAN DISC	NORM	87	72	90	180	EIGEN AXIS P 0 Y 90 ROT RATE = 1.0 °/SEC
5/22:25:00	PDRS -PITCH MNVR (FTO 445-01)	38.8	44	308.6	ROTR	5.0	0.2	1.0	A	MAN DISC	NORM	89	96	90	0	EIGEN AXIS P 0 Y 270 ROT RATE = 1.0 °/SEC
5/22:28:00	+ZSI ATT	321.2	224	51.4	INRTL	5.0	0.2	0.2	A	AUTO	NORM	94	95	90	180	P 270 Y 0 OM 267 TGT: SUN
5/22:32:00	INITIATE AUTO MNVR TO FRCS/ARCS THERMAL SOAKBACK ATT	--	--	--	--	5.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNVR TIME = 1 MIN EIG ANG = 3
5/22:33:00	FRCS/ARCS THERMAL SOAKBACK ATT	319.3	226.9	53.2	INRTL	5.0	0.2	0.2	A	AUTO	NORM	97	114	90	180	
5/22:46:00	FRCS THERMAL SOAKBACK BURN (FTO 412-06)					5.0	0.2	0.2	A	AUTO	NORM					F2F/F3F 30 SEC BURN
5/22:47:00	ARCS THERMAL SOAKBACK BURN (FTO 412-08)					5.0	0.2	0.2	A	AUTO	NORM					L1A 100 SEC BURN
5/22:49:00	ATTITUDE HOLD					5.0	0.2	0.2	A	AUTO	NORM					
5/23:02:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	5.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNVR TIME = 1 MIN EIG ANG = 3



TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS		DISC RATE (0/sec)	DAP		EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		ATT (deg)	RATE (0/sec)		SEL	CONT	RCS	$\theta$	$\phi$	$\delta$	
5/23:03:00	751 ATT	321.2	224	51.4	INRTL	5.0	0.2	0.2	A			98	236	90 180	P 270 Y 0 OM 267 TGT: SUN
6/04:22:00	FRCS/ARCS THERMAL SOAKBACK RECONFIG					1.0	0.02	0.2	A	AUTO	VERN				
6/04:32:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 8 MIN EIG ANG = 90
6/04:40:00	IMU ALIGN ATT	261	349.6	39	INRTL	1.0	0.02	0.2	A	AUTO	VERN	51	101	92 131	-Y ST TO STAR #43 -Z ST TO STAR #28 ANG SEP = 85
6/04:52:00	INITIATE AUTO MNVR TO PTC ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 7 MIN EIG ANG = 76
6/04:59:00	PTC ATT	8.6	226.8	53	INRTL	1.0	0.02	0.2	A	AUTO	VERN	106	161	90 131	SUN IN YZBY PLANE +X TOWARD R EIGEN AXIS P 358
6/05:05:00	START 0.4 DEG/SEC PTC ROTATION	8.6	226.8	53	ROTR	1.0	0.02	0.4	A	AUTO	VERN	101	185	90 131	ROT RATE = 0.40/SEC EIGEN AXIS P 358
6/05:25:00	S-BAND/UHF ANTENNA PATTERNS (FTO 471-01)	133	221.3	54.1	ROTR	5.0	0.2	2.0	A	AUTO	NORM	79	143	87 11	ROT RATE = 2.00/SEC EIGEN AXIS P 358
6/05:35:00	RE-ESTABLISH PTC	252	222.5	50.8	ROTR	1.0	0.02	0.4	A	AUTO	VERN	72	64	89 131	ROT RATE = 0.40/SEC EIGEN AXIS P 358
6/16:02:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	B	AUTO	VERN	--	--	--	MNVR TIME = 9 MIN EIG ANG = 105
6/16:11:00	IMU ALIGN ATT	248.2	248.9	339.4	INRTL	1.0	0.02	0.2	B	AUTO	VERN	28	141	148 281	-Y ST TO STAR #41 -Z ST TO STAR #50 ANG SEP = 85
6/16:22:00	INITIATE AUTO MNVR TO TAIL-TO- SUN	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 3 MIN EIG ANG = 34
6/16:25:00	TAIL-TO-SUN ATT	258.6	284.1	341	INRTL	1.0	0.02	0.2	A	AUTO	VERN	54	144	176 178	SUN 30 BELOW -Xby
6/18:05:00	CONFIG TO PRCS					3.0	0.2	0.5	B	AUTO	NORM				
6/19:54:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	3.0	0.2	0.5	B	AUTO	NORM	--	--	--	MNVR TIME = 4 MIN EIG ANG = 119
6/19:58:00	IMU ALIGN ATT	227	35.6	43.9	INRTL	3.0	0.2	0.5	B	AUTO	NORM	66	114	58 135	-Y ST TO STAR #14 -Z ST TO STAR #26 ANG SEP = 91.4

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TABLE 9-8 Concluded

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R Euler Seq) Roll Pitch Yaw			ATT MODE	DEADBANDS ATT RATE (deg) (°/sec)		DISC RATE (°/sec)	DAP		EARTH		SUN		REMARKS
									SEL	CONT	0	φ	θ	φ	
6/20:05:00	INITIATE AUTO MNVR TO IMU ALIGN VERIFICATION ATT	--	--	--	--	3.0	0.2	0.5	B	AUTO	--	--	--	--	MNVR TIME = 2 MIN EIG ANG = 48
6/20:07:00	IMU ALIGN VERIFICATION ATT	174.1	57.6	25.8	INRTL	3.0	0.2	0.5	B	AUTO	78	165	41	192	-Y ST TO STAR #49 -Z ST TO STAR #60 ANG SEP = 84.1
6/20:22:00	INITIATE AUTO MNVR TO TOP-TO- SUN ATT	--	--	--	--	3.0	0.2	0.5	B	AUTO	--	--	--	--	MNVR TIME = 4 MIN EIG ANG = 111
6/20:26:00	TOP-TO-SUN ATT	141.2	155.9	334.9	INRTL	3.0	0.2	0.5	B	AUTO	46	204	70	0	
6/21:09:00	CONFIG RJDs FOR ENTRY					3.0	0.2	0.5	B	AUTO					
6/21:11:00	DPS RECONFIG TO GNC					3.5	0.3	0.2	*	AUTO					
6/22:26:00	INITIATE AUTO MNVR TO DEORB BURN ATT	--	--	--	--	3.5	0.3	0.2	*	AUTO	--	--	--	--	MNVR TIME = 5 MIN EIG ANG = 51
6/22:31:00	DEORB BURN ATT	152	113	354	INRTL	3.5	0.3	0.2	*	AUTO	133	0	30	316	
6/22:40:00	ACTIVATE SINGLE APU					3.5	0.3	0.2	*	AUTO					
6/22:41:49	DEORB BURN IGNITION					3.5	0.3	0.2	*	AUTO					315.2 fps ΔV
6/22:44:44	DEORB BURN CUTOFF					3.5	0.3	0.2	*	AUTO					
6/22:46:00	INITIATE AUTO MNVR TO EI-5 ATT	--	--	--	--	3.5	0.3	0.2	*	AUTO	--	--	--	--	MNVR TIME = 11 MIN EIG ANG = 132
6/22:55:00	ACTIVATE REMAINING APUS					3.5	0.3	0.2	*	AUTO					
6/22:57:00	EI-5 ATT	196	339	26	INRTL	3.5	0.3	0.2	*	AUTO	103	179	107	201	
6/23:03:37	EI-5	1	39	359	LVLH	3.5	0.3	0.2	*	AUTO	129	180	107	201	

## ABBREVIATIONS/ACRONYMS

More complete compilations of abbreviations and acronyms are available in the Acronyms and Abbreviations Dictionary (Ref. 4).

ABBREVIATIONS/  
ACRONYMS

# ABBREVIATIONS/ACRONYMS

ACIP	AERODYNAMIC COEFFICIENTS IDENTIFICATION PACKAGE
ACN	ASCENSION ISLAND (STDN SITE)
ACT	ACTIVATE
ADI	ATTITUDE DIRECTION INDICATOR
AGO	SANTIAGO, CHILE (STDN SITE)
ANT	ANTENNA
AOA	ABORT ONCE AROUND
AOS	ACQUISITION OF SIGNAL
ATT	ATTITUDE
ATO	ABORT TO ORBIT
BDA	BERMUDA ISLAND, BWI (STDN SITE)
BOT	BOTSWANA (STDN SITE)
BUC	BUCKHORN, CALIFORNIA (STDN SITE)
CAL	CALIBRATION
CCTV	CLOSED CIRCUIT TV
CCU	CREWMAN COMMUNICATIONS UMBILICAL
CDR	COMMANDER
CDT	CENTRAL DAYLIGHT TIME
CFES	CONTINUOUS FLOW ELECTROPHORESIS SYSTEM
CHG	CHANGE
CL	CHECKLIST
COAS	CREWMAN OPTICAL ALIGNMENT SIGHT
C&W	CAUTION AND WARNING
DAP	DIGITAL AUTO PILOT
DB	DEADBAND
DEU	DISPLAY ELECTRONICS UNIT
DFI	DEVELOPMENT FLIGHT INSTRUMENTATION

ABBREVIATIONS/  
ACRONYMS

DKR	DAKAR, SENEGAL (STDN SITE)
DTO	DETAILED TEST OBJECTIVE
ECLS	ENVIRONMENTAL CONTROL LIFE SUPPORT SYSTEM
EDW	EDWARDS AFB, CALIFORNIA (DEORB OPT SITE)
EES	EMERGENCY EJECTION SUITS
EET	EVENT ELAPSED TIME
EMU	EXTRAVEHICULAR MOBILITY UNIT
EVA	EXTRAVEHICULAR ACTIVITY
FC	FUEL CELL
FDF	FLIGHT DATA FILE
FM	FREQUENCY MODULATION
FRD	FLIGHT REQUIREMENTS DOCUMENT
FSO	FUNCTIONAL SUPPLEMENTARY OBJECTIVE
FTO	FUNCTIONAL TEST OBJECTIVE
FWD	FORWARD
GAS	GET-AWAY SPECIAL
GDS	GOLDSTONE, CALIFORNIA (STDN SITE, 1ST ANTENNA)
GDX	GOLDSTONE, CALIFORNIA (STDN SITE, 2ND ANTENNA)
GNC	GUIDANCE NAVIGATION AND CONTROL
GPC	GENERAL PURPOSE COMPUTER
GSTDN	GROUND SPACE TRACKING & DATA NETWORK
GTS	GUAM ISLAND, U.S. (SGLS SITE)
GWM	GUAM ISLAND, U.S. (STDN SITE)
HAW	HAWAII (KAUAI, STDN SITE)
HTS	HAWAII (SGLS SITE)
HYD	HYDRAULIC
IECM	INDUCED ENVIRONMENTAL CONTAMINATION MONITOR

IMU	INERTIAL MEASUREMENT UNIT
INRTL	INERTIAL
IOS	INDIAN OCEAN (SGLS SITE)
ITS	INTERIM TELEPRINTER SYSTEM
LOS	LOSS-OF-SIGNAL; LINE-OF-SIGHT
LVLH	LOCAL VERTICAL LOCAL HORIZONTAL
MAD	MADRID, SPAIN (STDN SITE, 1ST ANTENNA)
MAX	MADRID, SPAIN (STDN SITE, 2ND ANTENNA)
MCC	MISSION CONTROL CENTER
MDM	MULTIPLEXER/DEMULTIPLEXER
MECO	MAIN ENGINE CUTOFF
MET	MISSION ELAPSED TIME
MIL	MERRITT ISLAND, FLORIDA (STDN SITE)
MILA	MERRITT ISLAND LAUNCH AREA
MLR	MONODISPERSE LATEX REACTOR
MLX	MERRITT ISLAND, FLORIDA (STDN SITE, 2ND ANTENNA)
MNVR	MANEUVER
MPM	MANIPULATOR POSITION MECHANISM
MPS	MAIN PROPULSION SYSTEM
MRL	MANIPULATOR RETENTION LATCHES
MTVC	MANUAL THRUST VECTOR CONTROL
NHS	NEW HAMPSHIRE (SGLS SITE)
OBS	OPERATIONAL BIOMED SENSORS; OBSERVATIONS
OEX	ORBITER EXPERIMENTS
OI	OPERATIONAL INSTRUMENTATION
OMS	ORBITAL MANEUVERING SYSTEM
OPS	OPERATIONS; OPERATIONAL SEQUENCE

ORB	ORBITER
ORR	ORRORAL VALLEY, AUSTRALIA (STDN SITE)
PCM	PULSE-CODE MODULATION
PDRS	PAYLOAD DEPLOYMENT AND RETRIEVAL SYSTEM
PL	PAYLOAD
PLBD	PAYLOAD BAY DOORS
PLT	PILOT
PM	PHASE MODULATION
PMC	PRIVATE MEDICAL COMMUNICATION
PMP	PUMP
PRCS	PRIMARY RCS
PRO	PROCEED
PSA	PRE/POST SLEEP ACTIVITY
PTC	PASSIVE THERMAL CONTROL
RCS	REACTION CONTROL SYSTEM
REF	REFERENCE
REFSMMAT	REFERENCE STABLE MEMBER MATRIX
RELMAT	RELATIVE MATRIX
RF	RADIO FREQUENCY
RMS	REMOTE MANIPULATOR SYSTEM
ROT	ROTATION
RTC	REAL TIME COMMAND
SAA	SOUTH ATLANTIC ANOMALY
S-BD	S-BAND
SEL	SELECT
SGLS	SPACE GROUND LINK SYSTEM/STATION (DOD)
SPC	STORED PROGRAM COMMAND
SSO	SUPPORT SYSTEM FOR THE OEX

ST	STAR TRACKER
STDN	SPACE TRACKING & DATA NETWORK
STS	SPACE TRANSPORTATION SYSTEM
TB	TALKBACK
TDRS	TRACKING AND DATA RELAY SATELLITE
TIG	TIME OF IGNITION
UHF	ULTRA HIGH FREQUENCY
VAC	VACUUM
VTR	VIDEO TAPE RECORDER
VTB	VANDENBERG TRACKING STATION (SGLS SITE)
WCCU	WIRELESS CREW COMMUNICATIONS UNIT
WCS	WASTE COLLECTION SYSTEM
WMC	WASTE MANAGEMENT COMPARTMENT
XFER	TRANSFER
X-POP	X BODY AXIS PERPENDICULAR TO ORBIT PLANE
-XSI	-X BODY AXIS TOWARDS SUN (TAIL TO SUN)
YAR	YARRAGADEE, AUSTRALIA (STDN SITE)
Y-POP	Y BODY AXIS PERPENDICULAR TO ORBIT PLANE
-ZLV	-Z LOCAL VERTICAL (-Z BODY AXIS TOWARDS EARTH)
+ZSI	+Z BODY AXIS TOWARDS SUN (BOTTOM TO SUN)



## REFERENCES

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  - a. Vol I, Groundrules and Constraints
  - b. Vol II, On-Orbit Profile
  - c. Vol III, Appendix A, On-Orbit Trajectory Data (Super Tape)
3. STS Work Day Handbook, JSC-10541
4. Acronyms and Abbreviations Dictionary, JSC-11764, April 15, 1980

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